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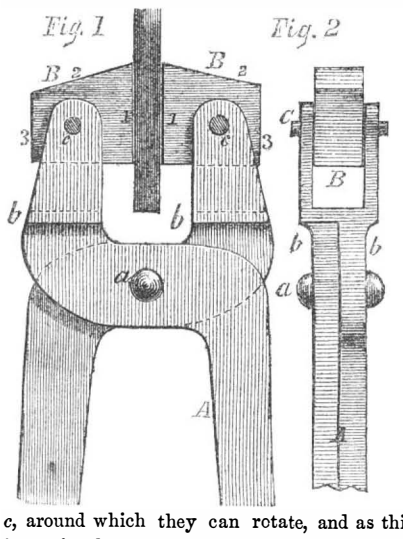
Hart's Improved Tongs.

When a substance of a taper form, or any shape that is not exactly square, is attempted to be grasped by an ordinary pair of tongs, they will not hold it very securely, because they are not adapted to conform to the irregularities of its surface. This is a serious objection to these useful implements, with the aid of which so much good work is done. The inventor of the tongs represented in our engravings — William Hart, of Mayville, Wis.—obviates this difficulty by providing an adjustable piece to each prong, so that they will grasp a body of taper or other form of much greater range of size than the usual tongs.

Fig. 1 shows a front view of this invention, and Fig. 2 a side view. A A are the two arms, hinged at *a*, and each carrying a block of metal, B, in a recess cut in the short part of the arm, *b*, seen in Fig. 2. These blocks of metal are pivoted to the arms, *b*, by a pivot,

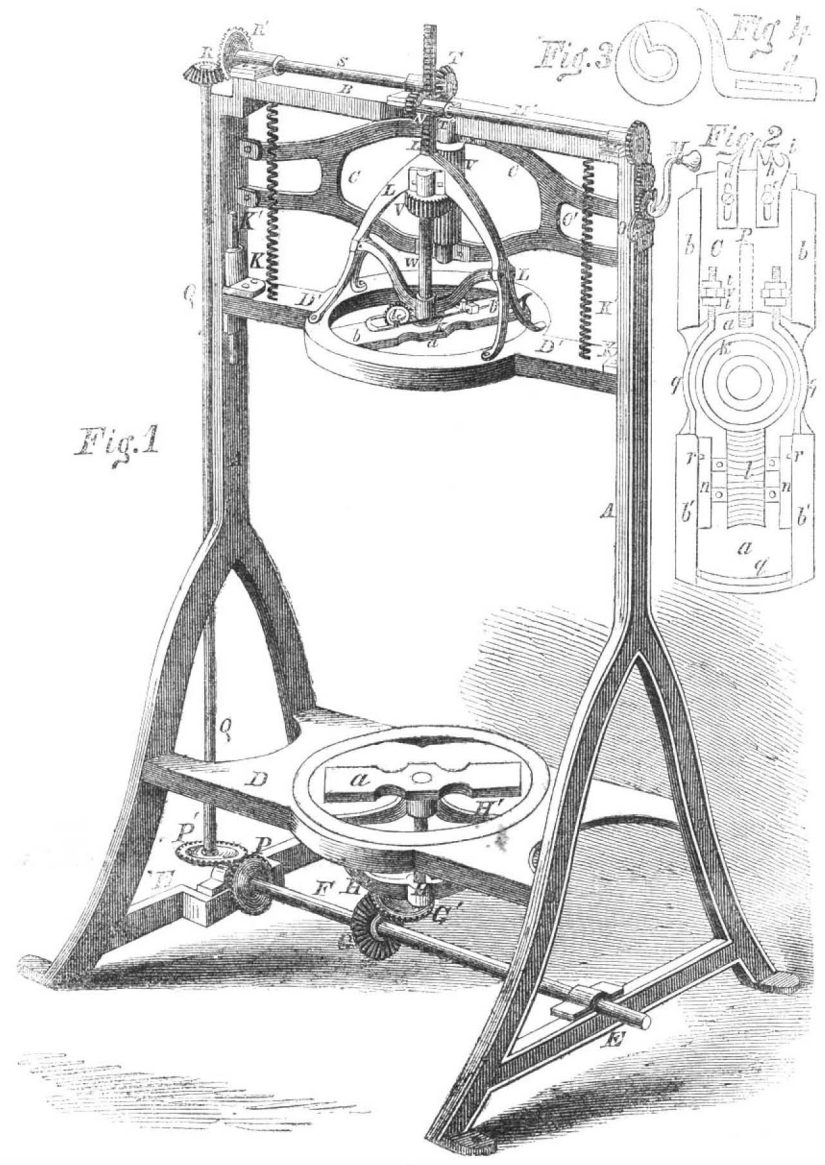


c, around which they can rotate, and as this is not in the center of B, by turning them round, they will accommodate diffierent sized articles; these corresponding sides may be numbered as shown in our illustration, so that they may easily be brought in unison. By their being able to revolve, they can easily grasp a substance of any angle, and although the principle is especially intended for blacksmith's tongs, it is applicable to many other purposes and tools.

These tongs were patented Dec. 29, 1857, by the inventor, who, on being addressed as above, will give any information that may be desired.

A SUIT was recently brought against a Maine railroad for lumber accidentally burned in transit, and the road had to pay up. Why not? Railroad companies contract with parties for carrying freight, and if it is destroyed by fire in transit, or stolen from the cars or stations, the company should be held to a strict accountability.

MATTISON'S BARREL MACHINE.



That highly important branch of mechanic art, the manufacture of barrels, is almost daily, we are happy to say, receiving some new contribution from the inventor and machinist, each doing their share; the one conceiving the idea, and the other constructing, out of wood and iron, new and useful machines for the production of those most useful articles for containing liquids or solids.

In the accompanying engravings we exhibit an improved machine for cutting the chamfer and croze of barrels at one operation, which we will now describe.

Fig. 1 is a perspective view, showing the machine in working position. The improvements in this machine consist, first, in the arranging of certain devices for traversing the chamfering and crosing tools out slowly, and drawing them in suddenly as required, to remove the barrel, and save the time of the operator attending the machine. Second, in making the edges of the rims, D and D′, as shown, to hold the barrel properly without removing the truss hoops, which hold the staves in place. Third, in making the crozing tool of such form that it shall not clog, by placing the points, *f* and *h*, one before the other, while the hooked chisel, *i*, clears the score, leaving it square, that being the proper form for tight work. Fourth, in graduating the feed as desired (by differently-formed cams) to the work. Fifth, in working both ends at the same time, by the use of the long gear, R Q P′. In the above illustrations, A A are posts connected by the top bar, B B, yoke, C C, and bottom hoop or rim, D, forming a strong frame, the bottom of each post having two legs, which are connected to each other by cross bars, E E. F is a shaft turning in boxes on the bars, E E, (the shaft may be provided with pulleys for the belt which is to operate the machine,) and carrying the wheel, G, which operates G′, and turns the shaft, H, in the frame, H′, fastened to the rim, D. The shaft, H, carries an apparatus for chamfering and crozing, as is shown in Fig. 2. The rims, D and D′, are made with a rebate, so as to hold the ends of the barrel without removing the truss hoops, this being a great advantage.

The rim, D′, is connected to brackets, K K, that can traverse on the ways, K′ K′, fastened to the posts, A A. This rim, D′, has the frame, L L, attached to it, and is connected to the rack, L′, by which the rim is raised and lowered as the crank, M, is turned, thus rotating the shaft, M′, moving in boxes fastened to the top bar, B, and carries the pinion, N, moving the rack, L′. The panel, O, holds the rim down while the barrel is being worked, and the springs, O′ O′, suspend it when not in operation.

The gear, P, on shaft, F, drives the wheel, P′, and shaft, Q, carrying the cog wheel, R, and gives motion to the gear, R′, and the shaft, S, turning in boxes fastened to the top bar, B, and carries the wheel, T, driving T′, and long toothed wheel, V, fixed in journals fastened to the yoke, C, and imparting motion to V′ and shaft, W, which turns in the frame, L, and carries the chamfering and crozing apparatus for the upper end of the barrel.

The grooving apparatus is shown in Fig. 2. It consists of a plate, *a*, fastened to the end of shafts, W and H, provided with dovetailing ledges, *b b*, between which the carriage, C, is traversed, carrying the chamfering knife, *d*, made in the form shown, (Fig. 4) and the crozing tool, *e*, which is made with spurs, *f* and *h*, to cut the upper and under sides of the score, and the hooked chisel, *i*, that removes the wood cut off by the spurs, and completes the croze to receive the edge of the head. To traverse the carriage the male screw, K, is fastened to the frame, L, so that the shaft, W, turns freely in it, and carries the gear, *l*, around it, so as to be rotated by it, and turn the cams, *n n*, on the same shaft with the gear, which shaft turns in bearings fastened to bar *a*. The form of the grooves in the cams is shown in Fig. 3, also *n*, Fig. 1. They are so shaped as to move the tools out gradually, and draw them in suddenly, (by the action of spring, *p*, Fig. 2,) to remove the crozing apparatus up out of the barrel as the rim, D′, and frame, L, are raised as before described.

The carriage, C, is traversed by the bridle, *q q*, (Fig. 2,) which is made so that its edges move under ledges, *b′ b′*, and a projection, *r r*, from the rack arm of the bridle enters each of the cams to give it motion. The ends of the arms pass through two lugs, *t t*, each on the carriage, C, with a screw nut, *v*, between them, to adjust the bridle as desired. Different sized barrels may be worked in the same machine, by using different sized rims, D and D′, and adjusting the bridle by the screw nut, *v*. The rims, D and D′, are made enough smaller than the common truss hoop used to force the ends of the barrel to take the shape of the rims. It is a great advantage to retain the truss hoops until the barrel is chamfered and crozed, as they keep the ends of the staves in their proper place. The two plates, *a* and *a′*, work in different directions, or in opposition to each other, making but little force necessary to hold the barrel firmly in its place.

It was invented and patented by J. H. Mattison. Further information may be obtained by addressing Mattison & Welch, care of J. L. Pool, Scriba, Oswego co., N. Y.

The Fine Weather and Railroads.

The Albany (N. Y.) *Evening Journal* says: "Though there is a large falling off in the freight and passenger receipts, on our railroads, during the months of December and January, the expenses have been so largely diminished that the net receipts are nearly if not quite equal to those of last year. The deep snow and severe weather of the last winter, besides the expense of keeping tracks clear, was destructive alike to engines and cars. The New York Central and the Hudson River Railroads have gained more in reduced expenses, during the last six weeks, than they lose in the falling off in gross receipts."

The Leviathan—What Next?

A correspondent of the New York *Daily Times*, with a sagacity which is quite surprising, proposes that the *Leviathan* be filled with coal gas, which, he says, will take away half her weight, and she may then be launched with ease. We have no doubt that Mr. Brunel will feel very grateful for this suggestion, but we scarcely think that he will have any occasion to act upon it, as we expect from the accounts received by the *Canada*, that she is now floating in her proper element.

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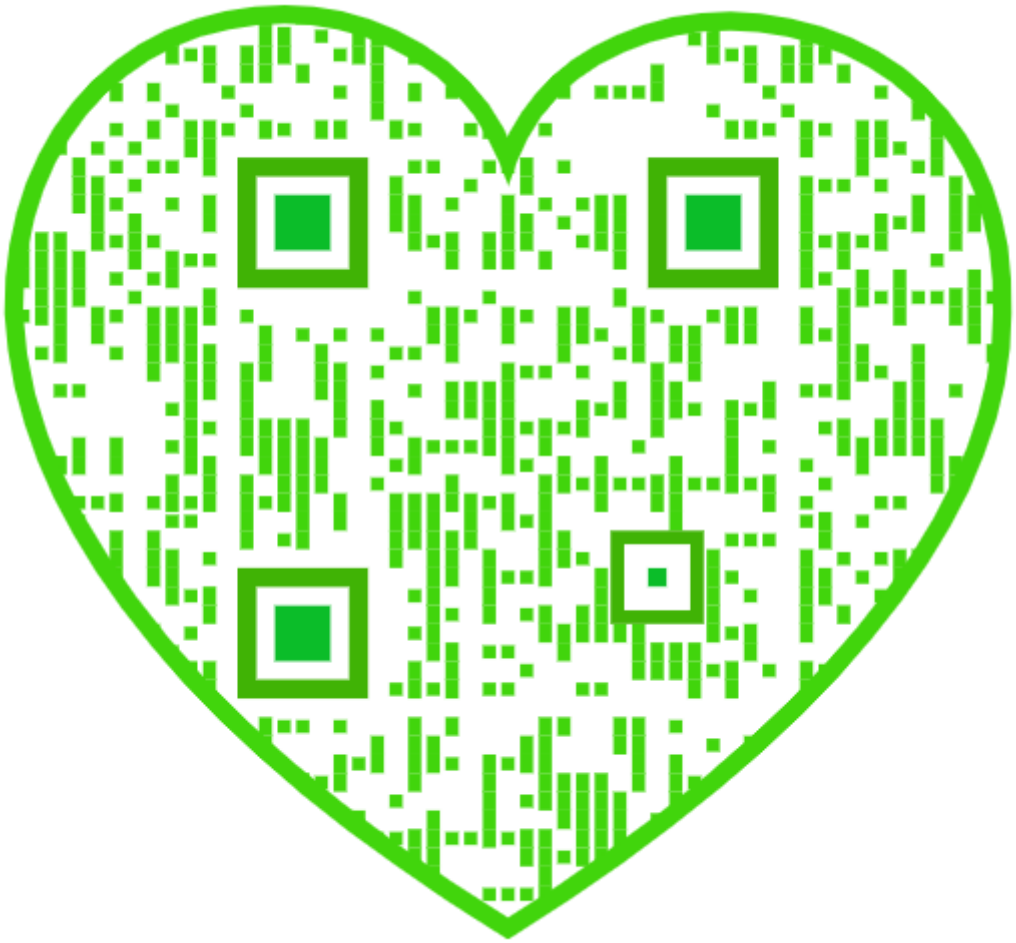

ANNUAL REPORT
OF THE
COMMISSIONER OF PATENTS.

UNITED STATES PATENT OFFICE,
January 20, 1858.

SIR—In compliance with the fourteenth section of the act entitled "An act in addition to the act to promote the progress of science and arts," approved March 3, 1837, I have the honor to submit the following report of the operations of this office during the year terminating the 31st of December, 1857 :—

No. 1.

Number of applications for patents	4,771
Number of patents granted (including designs, re-issues, and additional improvements)	2,910
Number of caveats filed	1,010
" applications for extension of patents	21
" patents extended	11
" patents expired	572
Of the patents granted, there were—	
To citizens of the United States	2,868
subjects of Great Britain	24
subjects of France	13
subjects of other foreign nations	5
Total	2,910

The patents granted to citizens of the United States were distributed among the several States, Territories, &c., as follows :—

New York	855	District of Columbia	33
Massachusetts	421	Alabama	27
Pennsylvania	314	Georgia	20
Ohio	235	Louisiana	20
Connecticut	161	North Carolina	14
Illinois	119	Tennessee	14
New Jersey	91	South Carolina	12
Indiana	60	Mississippi	11
Virginia	58	Iowa	11
Maryland	57	Delaware	10
Vermont	48	California	7
Missouri	44	Texas	5
New Hampshire	41	Arkansas	3
Kentucky	37	Minnesota	3
Michigan	35	Kansas	1
Rhode Island	36	United States Army	2
Wisconsin	31		
Maine	33	Total	2,868

Notwithstanding the rapid decline in the business of the office during the months of October, November and December, the aggregate number of patents for the year exceeded those of 1856 by four hundred and eight. This regularly progressive augmentation, which from year to year has been so long announced, is due alike to the inherent and irrepressible energy of the national mind and to the admirable system by which it is excited and fostered. That system wisely avoids the laxity of European laws, which grant patents, as of course, on all applications upon payment of the fees, and leave their value to be subsequently tested by the impoverishing process of protracted litigation. As decidedly, on the other hand, does it eschew that stern, unsympathizing, distrusting temper which would receive the inventor as a stranger beneath the roof of this magnificent edifice which has been reared at once as a monument to his genius, and as a depository of the trophies of his labors. That better policy, which adopts the happy medium between these two equally pernicious extremes, and which, while welcoming the inventor as a friend and patron, in that frank and free conference with him enjoined by law, kindly and anxiously sifts from his invention its minutest patentable features, is a policy essentially American in its origin and aims, and must be inflexibly maintained in the administration of this office so long as it remains faithful to the high mission with which it has been charged. The restless activity which has distinguished the inventive genius of the country during the past year has been confined to no class or pursuit. Alike from the walks of science, the workshops of the mechanic, and the broad lands of the husbandman, inventions have come thronging to this office, demonstrating how completely the national intellect is emancipated from the shackles of the past, and with what intense zeal it is pursuing that career of glory which is open before it. While every part of the field of invention has been assiduously occupied, that relating to agriculture has proved most fruitful. Of the twenty-nine hundred and ten patents issued, four hundred and thirty-eight (cotton gins, rice cleaners, and fertilizers included) were for agricultural processes and implements. This is a most grateful feature in the year's operations; for as the virtues of Cincinnatus have ever been found, like that illustrious patriot, at the plow, so every improvement in the arts and sciences tending to develop the strength and advance the general prosperity of the tillers of the soil, is broadening and deepening those foundations on which, alike in calm and in storm, the republic must rely for its security.

The characteristics of the inventions of the past year have been decidedly utilitarian. But little attention seems to have been bestowed upon articles of mere luxury. The unceasing inquiry has been for agencies capable of yielding the largest amount of the elements of human comfort, with the least possible expenditure of human labor. This is certainly a movement in the direction of the highest type of civilization; for until the masses of mankind shall have been relieved from the pressure of that ceaseless toil which renders life in its weariness but a reflection of the fabled tortures of the Sisyphus, it will be in vain to expect for the mental and moral nature of our race more than the morning twilight of that development whose noonday splendors have been so long the dream and the hope of the philanthropist.

No. 2.

STATEMENT OF MONEYS RECEIVED AT THE PATENT OFFICE DURING THE YEAR 1857

Received on applications for patents, re-issues, additional improvements, extensions, caveats, disclaimers, and appeals	$182,250 00
Received for copies and according assignments	13,882 01
Total	$196,132 01

No. 3.

STATEMENT OF EXPENDITURES FROM THE PATENT FUND DURING THE YEAR 1857.

For salaries	$82,711 23
For temporary clerks	43,236 80
For contingent expenses	47,107 58
For payments to judges in appeal cases	300 00
For refunding money paid into the treasury by mistake	206 50
For refunding money on withdrawals	38,019 98
Total	$211,582 09

The above aggregates of receipts and expenditures accrued as follows :—

	In the 1st quarter.	*Second*	*Third.*	*Fourth.*	*Total.*
Rec's.	$55,290 22	60,783 08	45,172 75	34,886 04	$196,132 01
Exp's.	59,721 85	59,786 53	53,433 54	47,640 17	211,583 09

Excess of expenditures over receipts - $15,450 08

The excess of expenditures over the receipts of the past year admits of a satisfactory explanation. A large part of this excess is made up of $9,234 58, paid in the month of January, 1857, for stationery, parchment, and books purchased in 1856, and which—as the parchment and stationery had been consumed in the current business of the office—were properly chargeable to that year. During the first three quarters the receipts exhibit an average per quarter of $53,748; in the last quarter they suddenly declined to $34,886—showing a deficit for that brief period, as compared with the average, of $18,862. There is in this no evidence either of improvidence or of inability on the part of the office to maintain that self-sustaining character which it has always supported in legal estimation and in fact. Had not the year 1857 been burdened with heavy pecuniary responsibilities belonging to 1856, and had the revenues continued for the last as during the previous quarters, instead of there being an excess of expenditures over the receipts, there would have been a surplus on hand of at least $12,646. It is scarcely necessary to add that the abrupt falling off in the business, and consequently in the revenues of the office, commencing in September and continuing throughout the last quarter, was a consequence of that financial revulsion whose baleful influences have been felt in all the business relations of life. Happily, this calamity, so disastrous for the moment, is rapidly passing away, and the return tide of prosperity, so confidently anticipated, will no doubt be fully shared by this office.

No. 4.

STATEMENT OF THE CONDITION OF THE PATENT FUND.

Amount to the credit of the Patent Fund, 1st of January, 1857	$55,169 54
Amount paid in during the year.	196,132 01
Total.	251,301 55
Deduct amount of expenditures during the year.	211,582 09
Leaving in the treasury 1st of January, 1858	$39,719 46

TABLE EXHIBITING THE BUSINESS OF THE OFFICE FOR SEVENTEEN YEARS, ENDING DEC. 31, 1857.

Years.	*Appl'ts filed.*	*Caveats filed.*	*Patents issued.*	*Cash received.*	*Cash expended.*
1841..	847	312	495	$40,413 01	$23,065 87
1842..	761	291	517	36,505 68	31,241 48
1843..	819	315	531	35,315 81	30,776 96
1844..	1,045	380	502	42,509 26	36,344 73
1845..	1,246	452	502	51,076 14	39,395 65
1846..	1,272	448	619	50,264 16	46,158 71
1847..	1,531	533	572	63,111 19	41,878 35
1848..	1,628	607	660	67,576 69	58,905 84
1849..	1,955	595	1,070	80,752 78	77,717 44
1850..	2,193	602	995	86,927 05	80,100 95
1851..	2,253	760	869	95,738 61	86,916 93
1852..	2,639	996	1,020	112,056 34	95,916 91
1853..	2,673	901	958	121,527 45	132,869 53
1854..	3,324	868	1,902	163,789 84	167,146 32
1855..	4,435	906	2,024	216,459 35	179,540 33
1856..	4,960	1,024	2,592	192,588 02	199,931 02
1857..	4,771	1,010	2,910	196,132 01	211,582 09

It will be seen from this condensed exhibit that, with the exception of the very slight and momentary check experienced in the last quarter, the increase in the business of this office has been steady and uninterrupted. The inventive genius of the country, great as have been its efforts and attainments, has manifested none of the languor of exhaustion, nor testified any inclination for repose. Each discovery made, like a fire kindled in a dark place, while enlarging the horizon of science, has laid bare yet other and wider fields to be traversed by its ever-brightening pathway.

In reviewing the triumphs of invention and discovery, in every department of the arts and sciences, for the last three-quarters of a century, and in marking their beneficent influences in softening the asperities and exalting the dignity of human labor, there is abundant cause for heartfelt exultation. The blessings thus diffused are as universal as the air we breathe, and, amid all the changes, social and political, to which we may be exposed, they will still endure, or will pass away, only to give place to some higher and nobler fruit of the same indomitable genius which produced them. But, while there is thus in the past so much to excite our pride, there is in the future yet more to excite our hopes. If that future is to be measured by the strides of that past, rapid as has been our advancement, it is but reasonable to infer that we have scarcely crossed the threshold of the temple of human knowledge, and, and magnificent as may seem the trophies we have treasured up, it would hardly be an exaggeration to say—to borrow the thought of the great Newton—that we have gathered as yet but a few pebbles and shells on the shore of that ocean of truth, whose depths still lie unexplored before us.

With as much care and with as near an approach to strict accuracy as was possible, the table which follows has been prepared, for the purpose of presenting a comparative view of the progress of inventions for a single year in the United States and in the other nations therein designated :—

Country.	*Patents granted in 12 months.*	*Population.*
France	6,187	35,781,628
United States	2,910	23,191,918
Great Britain and Ireland	2,115	27,511,447
Belgium	1,413	4,426,202
Austria	724	36,514,466
Sardinia	185	4,368,972
Saxony	116	1,828,732
Canada	100	1,842,265
Hanover	49	349,958
Prussia	48	16,923,721
Bavaria	45	4,519,546
Netherlands	43	3,203,232
Sweden	32	3,482,541
Wurtemberg	25	1,733,263
Russia	24	69,660,146
Brazil	4	4,750,000

As the strict examination of all inventions sought to be patented, which forms so prominent a feature in our system, does not prevail in the transatlantic governments referred to, a more correct estimate would be arrived at by comparing, not the patents issued—amounting to twenty-nine hundred and ten—but the number of applications—four thousand seven hundred and seventy-one—with the patents granted by the foreign governments during the same period of time. It is known that at least 854—probably more—of the Belgian patents were those of France and other governments re-issued. Notwithstanding the fetters flung by imperial hands athwart the tides of French genius, they still obey the heroic impulses imparted to them by the revolution of 1790, and continue, with equal daring and ease, to change the forms of government and the fashion of the minutest articles of trade. It is in the light of the evening crepuscule of that revolution that French science still pursues its sublime career. In Russia—whose government is verging upon the thousandth year of its existence—in 1852, 1853, and 1854, but ninety-seven patents were issued, of which fifty-six only were granted to natives of the empire; being an average of about nineteen per annum in a population of sixty-nine millions. For twelve months ending November, 1857, the patents granted amounted to twenty-four; of which but thirteen were to natives of the country. While that empire and the United States are the antipodes of each other in their political organizations, so do they present, developed in striking contrast, the results to which their respective political systems tend. That the intrepid and quenchless spirit of inquiry which seems inseparable from every throb of American life, and which, from year to year, is is filling this office with the memorials of its achievements, is one of the boons of our republican institutions, may be affirmed without the hazard of contradiction. As the soil, when exposed to the sunshine and the shower, starts into life, the germ of every flower and shrub and tree lurking beneath its surface, so acts the human soul when stimulated and kindled by the influences of well-regulated political freedom. The above table, in its every line and lineament, palpitates with the demonstration of this great, and for us most gratifying, truth. In examining it, passing from our own favored land, we can but note that, as the light of liberty waxes dimmer and dimmer, so does the inventive genius flag and dull apace, until finally, amid the darkness of the political night which broods over eastern lands, it is utterly extinguished. Upon the mountain slopes of the far East may be seen narrow, winding paths, in which, for uncounted centuries, the burden-bearing camel has been treading on precisely the same spot, until now his foot-print, distinct and deep, is worn far into the solid rock—a fitting symbol of the oriental mind beneath the crushing incubus of oriental despotism.

Subjoined to this report will be found the usual catalogue of patents which expired during the past year; also, a classified summary of those issued during the same period, together with an alphabetical list of the patentees, followed by the drawings and by abridgments of the specifications, which, under our laws, not only illustrate the patent, but are part and parcel of it.

While the statutes organizing and regulating the action of this office constitute, perhaps, the best system of patent laws ever devised, still the experience of the last twenty years has disclosed various imperfections in their provisions, the more prominent of which, with the remedies proposed, I deem it proper at this time briefly to urge upon the attention of Congress.

In applications for the extension of patents and interference cases, a wide range of inquiry into matters of fact is often essential to the ends of justice. The existing laws furnish no means for compelling the attendance of witnesses, nor for obliging them to testify upon such issues. The interests bound up with these investigations are frequently of the greatest magnitude, and, as a consequence, refractory or mercenary men, availing themselves of this omission in the law, have refused to appear or give their depositions, except upon the payment of the most exorbitant sums by the parties claiming their testimony. Cases of this character, while working the most cruel hardship to individuals, have tended to bring the administration of the government into discredit, if not into contempt. No reason is perceived why the processof subpœna, freely allowed to all litigating their interests in the courts of the country, shall be withheld from the parties to these important and complicated controversies.

Whatever might be the capabilities of the Commissioner for physical and mental labor, it would be impossible for him to discharge the administrative duties of his office and hear in person all the appeals brought before him from the decisions of the Examiners. The usage has hence grown up of referring the investigation of most of these appeals to a board constituted for the occasion, consisting of two or more Examiners, who make their report to the Commissioner. As these boards lack permanence, and from necessity, indeed, have been constantly changing, without a critical examination of each report by the Commissioner—which is not practicable—uniformity in action and in the assertion of principle cannot be maintained. To prevent in future that conflict which has been so often deplored in the past, it has been recommended that there shall be appointed a permanent board of three Examiners-in-Chief, who shall be charged with the duty of hearing and determining upon all appeals from the judgment of the primary Examiners. Such a tribunal would, no doubt, attain the end sought, and the members of it, should their appellate duties not fully occupy their time, could by the Commissioner be assigned labor in the classes requiring such assistance with much advantage to the public service.

In consequence of requiring models in applications for designs—a class of cases in which, for purposes of illustration, they are rarely needed—and in consequence of the retention by the Office of the models in all rejected applications, the accumulation has been rapid, and threatens to prove a serious public inconvenience. A large number of these models, which occupy so much space in the building, are admitted to be valueless, and were they removed, and the drawings and specifications alone retained, no prejudice to any interest, public or private, could ensue. Should Congress think proper to invest the Commissioner with a discretionary authority over them, its judicious exercise would accomplish results much to be desired.

It will be observed that of the $211,582 09 set forth as the aggregate expenditures of the office for the year 1857, $38,019 98 consisted of fees returned to applicants, on applications withdrawn, after examination and rejection. The necessity of a change in this feature of the existing law has been heretofore expressed, and is still felt with increasing force. Did the patent constitute the consideration for which the fee of thirty dollars is paid, it would be but reasonable that this sum, or a part of it, should be returned upon the abandonment of the claim. Such, however, is not the case. The consideration of the patent is the surrender of the invention to the public at the expiration of the fourteen years for which the monopoly is granted. The thirty dollars forms the compensation—and is no more than a just one—for the labor bestowed by the office in the preparation and examination of the application. When this has been performed, it is neither just nor expedient that the well-earned compensation for it should, in whole or in part, be withheld. A tariff of fees, which, while dividing the services required, provides that they shall be paid for, step by step, as they progress, has been proposed, and, it is hoped, will be favorably considered by Congress. This would be alike agreeable to the inventor and to the office,

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protecting, as it would, the former from the oppression of paying for any services not in fact rendered, and the latter from the injustice of performing any labor for which it is not remunerated.

It should be mentioned that during the year just closed, applications have been filed for letters patent for several inventions, alleged to be valuable, and to have been made by slaves of the Southern States. As these persons could not take the oath required by the statute, and were legally incompetent, alike to receive a patent and to transfer their interest to others, the applications were necessarily rejected. The matter is now presented to the consideration of Congress, that, in its wisdom, it may decide whether some modification of the existing law should not be made, in order to meet this emergency, which has arisen, I believe, for the first time in the history of inventions in our country.

The defects developed by the practical operation of the laws intended to secure the rights of inventors, suggest the propriety of their careful revision. At the expiration of his patent, the inventor is bound to surrender to the public his invention—the fruit, it may be, of many years of anxious toil—and from this undertaking there is no possibility of escape. As an equivalent for this surrender, the government stands pledged to insure to him the full and peaceful fruition of his monopoly during its continuance, and this pledge constitutes one of the most solemn obligations of law and of honor. The compact thus entered into, distinct in its import, and reciprocally binding in its stipulations, is based upon the highest considerations recognized by law, and ought to be executed by the government with that scrupulous fidelity which should ever distinguish the strong when dealing with the weak. While, however, this species of property yields to none other in its national importance, and surpasses all others in the amount which it pays for the legal safeguards thrown around it, it is notorious that it enjoys but a precarious and incomplete protection. The more prominent of the causes conducing to this result are, the helplessness of inventors as a class; the peculiarly exposed character of their interests to be defended; the universal impatience of legal restraints as manifested in that lawlessness which so sadly mars the body of the times in which we live; and, lastly, the unskillful adjustment of subsisting instrumentalities to the performance of those duties of guardianship which the government has assumed upon itself. If the law relaxes the vigilance of its watch over the homestead of the citizen, he can take his stand at his own threshold, and with his own right arm beat back those who would invade it; but the rights of the inventor are co-extensive with the limits of the republic, and may be assailed and despoiled at a thousand points in the same moment of time. The eyes of Argus would not suffice to discover, nor the arms of Briareus suffice to resist, the assaults of so omnipresent a foe as it is his lot to encounter. If, then, the faith which the government has plighted with him fails, he is utterly without shelter. This is no sketch of the imagination. Again and again have inventors, impoverished in fortune and broken in spirit, come to this office, seeking the extension of their patents, and demonstrating by testimony that the fourteen years which should have been devoted to reaping the harvest of their labors were worse than wasted in harassing and ruinously-expensive litigation in defence of their patented privileges. The insolence and unscrupulousness of capital, subsidizing and leading on its mercenary minions in the work of pirating some valuable invention held by powerless hands, can scarcely be conceived of by those not familiar with the records of such cases as I have referred to. Inventors, however gifted in other respects, are known to be confiding and thriftless, and being generally without wealth, and always without knowledge of the chicaneries of the law, they too often prove but children in those rude conflicts which they are called on to endure with the stalwart fraud and cunning of the world. It would certainly be practicable to affix a limit to this oppressive litigation—at least to that feature of it which calls in question the validity of the patent—while the sense of public justice would not be shocked by inflicting something more than a verdict of damages on wanton offenders of this class. It is admitted that the subject is embarrassed with difficulties, but it is believed they are not insuperable. It is a principle of criminal jurisprudence that the penalty shall be proportioned in its severity to the temptations and facilities which exist for the commission of the crime. The principle is a sound one, and would justify legislation of unusual rigor in behalf of the down-trodden interests of inventors.

The existing laws authorize the granting of patents only to original inventors, their representatives and assignees. While the wisdom of the general principle thus asserted is undeniable, still certain facts connected with the condition of the arts and sciences in Europe would justify the inquiry whether, if compatible with the constitution, a solitary exception to the rule might not be advantageously allowed? It is well-known that for a long period of time manufacturing processes of great value have existed beyond the Atlantic, but which have neither been patented, nor described in any printed publication, nor introduced into public use. They have been, and are still employed within the walls of well-guarded manufactories, whose operatives, in entering the service, assume upon themselves obligations of secrecy. Thus, from generation to generation, a knowledge of these useful arts is clandestinely transmitted, and the world is oppressed by the burden of perpetual monopolies. The opinion is entertained that, if our laws could be so modified as to extend the shelter of a patent to these arts and inventions, by whomsoever revealed and introduced, many of them would find their way into the United States, and perhaps among the number the most important of all—the hitherto-concealed process for the manufacture of Russia sheet iron. That their introduction would be a national service, for which it would be competent to make a national remuneration, will hardly be controverted. Whether the constitutional scruples which exist can be so far overcome as to give to this remuneration the ordinary, and certainly the most effective form—that of Letters Patent—is a question which the magnitude of the interests involved renders worthy of the serious consideration of Congress.

While the fee paid for a patent by an American ciziten is but thirty dollars, the sum of five hundred dollars is exacted from a British subject, and three hundred from the citizens and subjects of other foreign governments. This harsh and seemingly unwise discrimination has formed the subject of earnest remonstrance on the part of my predecessors; but, weighty as are the objections which have been urged against its continuance, they have failed to attract the favorable notice of Congress. If the existing law can be regarded as having been adopted in a spirit of retaliation, its framers totally misconceived the European policy to which it was intended to respond. Careful inquiry enables me to state that, with the exception of Prussia, ours is the only nation known to distinguish, in granting patents, between the native-born and foreign inventor. It is true that the English, French, and other transatlantic governments require the payment of the patent fees apparently enormous and oppressive as compared with those paid here by American citizens, but, exorbitant as these fees may seem, they are demanded alike of all—natives and foreigners. With those nations the patent laws are measures of revenue, and as the administration of their peculiar political institutions involves the outlay of vast treasures, their revenue systems must be upon a correspondingly gigantic scale. With such governments such measures may perhaps plead an absolute financial necessity in their justification, and they certainly carry with them not the slightest approach to that breach of national comity which our legislation appears so strangely intended to rebuke. But upon what principle can it be maintained that the government of the United States, boasting of the simplicity and cheapness of its administration, and of its entire disenthralment from the political burdens of the Old World, shall imitate this solitary feature of transatlantic taxation? It may occur to those who do not look beyond the surface of this provision that the exaction, being made upon the foreigner, is therefore a national gain; but this is manifestly a delusion. It is incontestably true, that though paid by the foreigner in the first instance, on the issuing of his patent, he is ultimately reimbursed from the purse of the native consumer. Besides, of all taxes, it is the most odious, being a tax on knowledge, and upon the highest forms and noblest aims of human philanthropy. If other goverments are so insensible to the dictates of an enlarged public policy, and so wanting in sympathy with the governed, as to prefer, or so unfortunate as to feel constrained to resort to imposts, thus embarrassing the inventive genius of the age, shall we so far violate the convictions inseparable from our political faith and nature as to follow in their footsteps? The people of the United States have a deep interest in all useful inventions, wherever and by whomsoever made, and their passage from land to land should be as free as the winds and sunshine of Heaven.

Near half a century ago, the government of the United States inaugurated the principle of reciprocity in the commercial intercourse of nations. It invited the concurrence of all other governments, by offering to place their citizens and subjects on the same footing with the citizens of this country, provided like advantages were by them extended in return. With a single exception, this principle is now engrafted upon every treaty regulating our commerce with Europe, and in introducing a new and brilliant epoch in our history it has laid the axe to the root of that jealousy of strangers so prevalent among the benighted Asiatics, and which, wherever found, is recognized as a lingering badge of barbarism. It is asked that this doctrine, so just in itself, and of which we are so justly proud, shall be embodied in our patent laws. Every European government, with the single exception stated, has placed American citizens on a footing of perfect equality with its own subjects, so far as its system of patent laws is concerned. In the presence of such a fact appealing to us, to uphold longer this obnoxious discrimination would be to insist that the strictly local and domestic legislation of other nations shall be adjusted to meet our peculiar views, or, what is yet more unreasonable, that the governments of those nations shall accord to our citizens privileges which they deny to their own. While recognizing it as our duty to be courteous and liberal even upon the arena of trade, where human selfishness is most prone to prey upon the stranger, can we, without the grossest inconsistency, refuse to be so on that broader and more elevated theater of action, whose themes affect the advancement and happiness of the race, and where at every moment we are forced to acknowledge that the gain of other nations is our gain, and their loss is necessarily ours also?

Regarded from the lowest point of view—its bearing upon the finances of this office—the feature of the act of 1836, under discussion, has proved a failure. Excluding, as it does, multitudes of inventions which would otherwise be introduced, no doubt is entertained but that it yields a smaller amount of revenue than would the more moderate schedule of fees proposed in its stead.

The colonial government of Canada, treating, as is supposed the act of 4th July, 1836, as aggressive in its spirit, responded by absolutely excluding American citizens from the benefits of its patent laws. In consequence, that vast country, affording one of the richest harvests of the world for the inventive genius of our fellow-citizens, remains closed against them. The people of Canada are scions of the same stock from which sprang the founders of our republic. They speak the same language, worship before the same altars, have the same forms of social and domestic life, and draw the inspirations alike of their literature and of their laws from the same high sources with ourselves. Along the borders of eight of the States of our confederacy, with but narrow intervening lakes and rivers, their territory extends—a colony, it is true, in its political aspects, but an empire in the greatness of the future which is dawning upon it. When we examine yet more closely the character and condition of that country, and realize how gigantic are the public works which pervade it, as so many pulsating arteries of trade and of travel; how exhaustless are its agricultural and mineral resources and the elements of its manufacturing power; and how rapidly, with every wave of European immigration that breaks on our shores, its population is increasing, it is difficult to resist the conviction that we have everything to gain and nothing to lose by cultivating with these, our nearest neighbors, the most cordial and intimate relations. In 1853, the imports into Canada from the United States amounted to $11,782,145, and the imports into the United States from Canada to $8,926,360. Under the benign influences of the reciprocity treaty, which went into operation on the 11th September, 1854, the commerce between the two countries has rapidly increased, so that, in 1856, the imports into Canada from the United States swelled to $22,704,508, and the imports into the United States from Canada to $17,879,752. A more complete vindication of this act of enlightened statesmanship than such a result presents could not be desired by its most earnest advocates. The observance of a lofty and generous policy, in our intercourse with other nations, must ever bear such fruit as this. There is every reason to believe that no disposition is felt on the part of the people or of the political authorities of Canada to continue longer the unpleasant and embarrassing relations with the United States, to which their respective systems of patent laws have given rise. The bare introduction of a bill into the last Congress proposing a repeal of the provision of the act of 1836, under examination, was at once followed by a corresponding movement on the part of the Canadian government, having for its object a removal of the existing restrictions upon American inventors. If this movement failed of its consummation, I am well assured it was only because the bill referred to failed to become a law. The highest considerations of public interest seem to require that Congress, regardless of mere national punctilio, shall frankly use its utmost endeavors to open to American inventors this attractive and remunerative field, from which, by an unhappy course of legislation, they have been so long excluded. Whether the Canadian estimate of the act of 1836 be just or not, it is certain that from its foundation the government of the United States has been unceasing in its efforts to liberalize and elevate the intercourse of nations, and that, in view of its antecedents, it can well afford to take the initiative, and offer an example of liberality to the world, as it is certainly beneath its dignity and mission to follow an example of an opposite character, by whatever government or people it may be set.

The Patent Office, silent and unobtrusive in its course, connecting itself with none of the agitations of the day, and demanding nothing from the public treasury, asks only the assent of the national legislature to such an arrangement of its instrumentalities as shall secure the highest possible efficiency to its action. Beyond its mission of beneficence to all, it has no ambition to gratify, no triumph to achieve. The well-springs of its life are fed by contributions from the benefactors of our race, and it is in their name that this appeal, so often made, and so long unheeded, is now respectfully, but most earnestly, renewed.

J. HOLT.

Hon. JOHN C. BRECKINRIDGE,
Vice President of the United States.

The Rind of Fruit Indigestible.

This applies to all fruit, without exception, and includes also the pellicle or skin of kernels and nuts of all kinds. The edible part of fruit is particularly delicate, and liable to rapid decomposition if exposed to the atmosphere; it is, therefore, a provision of nature to place a strong and impervious coating over it, as a protection against accident, and to prevent insect enemies from destroying the seed within. The skin of all the plum tribe is wonderfully strong, compared with its substance, and resists the action of water and many solvents in a remarkable manner. If not thoroughly masticated before taken into the stomach, the rind of plums is rarely, if ever, dissolved by the gastric juice. In some cases, pieces of it adhere to the coats of the stomach, the same as wet paper clings to anything, causing sickness and other inconvenience. Dried raisins and currants are particularly included in these remarks, showing the best reasons for placing the fruit upon the chopping-board with the suet in making a pudding of them; for if a dried currant passes into the stomach whole, it is never digested at all. When horses eat oats or beans that have not been through a crushing-mill, much of this food is swallowed whole, and in this state, being perfectly indigestible, the husk or pellicle resisting the power of the stomach, there is so much loss to nutrition. Birds, being destitute of teeth, are provided with the apparatus for grinding their seed, namely, the gizzard, through which the seed passes, and is crushed prior to digestion. The peelings of apples and pears should always be cast away. Oranges we need not mention, as this is always done. Orleans, greengages, damsons, and all plums, should be carefully skinned if eaten raw, and if put into tarts, they should be crushed before cooking. Nuts are as indigestible as we could desire, if the brown skin be not removed or blanched, as almonds are generally treated. SEPTIMUS PIESSE.

Salt from the Gulf Water.

The Academy of Science in New Orleans has received a paper purporting to demonstrate the fact that the waters of the Gulf, on the borders of south-western Louisiana, and thence to Texas, are the saltest that have been submitted to scientific tests, and that, by the process of evaporation in tanks, salt of a superior quality, equal to that of Turk's Island, may be obtained.

Turkish Progress.

The march of intellect is evidently directed towards the East. A small printing-office was sent from Paris to Constantinople a short time ago. This press is to be worked entirely by the ladies belonging to the harem of one of the great Pashas residing on the Bosphorus. The books intended to be printed are chiefly works of amusement, translated from the French and English.—*London Engineer.*

A chemical analysis of various liquors sold at a low rum shop on one of the wharves of San Francisco, showed that there was prussic acid and morphine in the brandy, sulphuric acid in the gin, and strychnine and kreosote in the whiskey.

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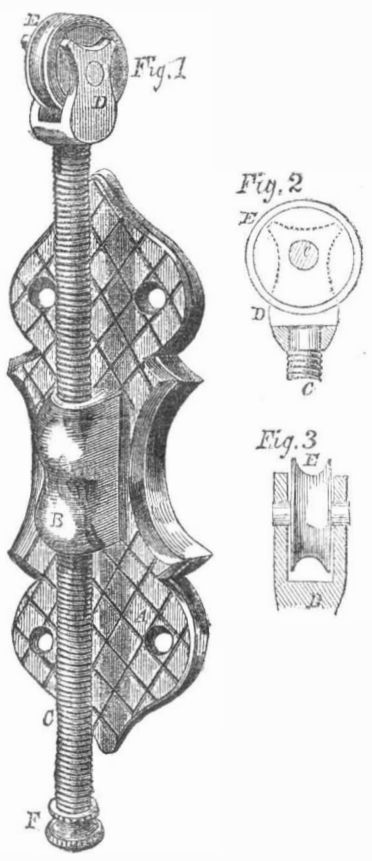
New Inventions.

Schleier's Shade Fixtures.

Who has not been vexed when they have tried to wind up the inside window shade and found the cord too slack, and the shade come down with a run, or perhaps the cord was too tight, and it would not move at all? Who has not also pinched their fingers or broke their thumb-nail in the attempt to fix and adjust the refractory catch? Nearly every one



has, more or less, felt the inconvenience of the awkward fasteners now in use, and we now engrave one that has none of these disadvantages, and is simple and elegant. It consists of an ornamented plate, A, which can be secured to the frame of the window by screws or nails; there is cast on this a projection, B, through which a worm is cut, making it answer the purpose of a fixed nut, through this there passes the screw, C, of a fine thread provided with a milled head, F, by which it can be turned so as to tighten or loosen the cord which is passed round the pulley, E. The screw, C, is connected to D, which forms the pulley's support by the plane head, *c*, lower at the top than bottom, and this fitting into a properly shaped hole in D, so that D can turn round, and the screw can turn and depress or elevate it without disturbing the position of the pulley, which rotates on an arbor, *e*. The two small diagrams show a side view of the pulley and rest, and an end view of the same.

It is a most useful little invention, and was invented by Charles Schleier, of Brooklyn, N. Y., and patented by him January 26, 1857. Mr. S. has assigned the invention to John H. Bonn, of 229 Broadway, this city, from whom all further particulars may be obtained.

Premium for a Steam Plow.

The following, from the *Prairie Farmer*, affords evidence that the farmers of Illinois are imbued with the true progressive spirit:—

"At the late meeting of the Executive Board of the Illinois State Agricultural Society, a resolution was passed offering five thousand dollars for the best steam engine suitable for plowing, or other farm work—its efficiency to be decided by the Board. It is a little singular that the construction of this desirable machine has so long baffled human ingenuity. We know that there are many and complicated obstacles to overcome; yet, where such immense interests are at stake, it seems as though mechanical genius ought to concentrate its energies and overcome them all. In the northwest, steam plowing will be most extensively and profitably employed. One of its chief advantages will consist in the depth to which it will plow. If our rich prairies were plowed twenty inches deep, twenty-five per cent would be added to their productiveness. Animal strength, however skillfully directed, cannot profitable accomplish that result. A ditching steam plow might be invented, which would perform a vast amount of labor in a short space of time. It is hardly to be expected that the proposed machine will materially reduce the cost of plowing; but the quality of its work will compensate for any disappointment in this respect."

Peat, Lime and Potatoes.

We have received a letter from Mr. Philip O'Reilly, of Providence, R. I., in which he states that lime is of no avail in preventing potato rot, as he has tried it, and has seen it it tried by others in vain. After many experiments, he has found that a handful of dry peat in powder or in small pieces was the best preventive, and he thinks if it were generally applied, it would save ninety-nine in every hundred hills. This experiment can easily be tried. Those farmers who cannot get peat may use swamp muck, which is nearly as good. While we advise our readers to be up and doing, in trying experiments, we exhort them always to count the cost first. Various specifics have been recommended as preventives of the potato disease; but we must enjoin caution against relying positively on any *one* presented. A certain specific may be a remedy in one situation, or in one season, and not in another, just like medicine as applied to the genus *homo*.

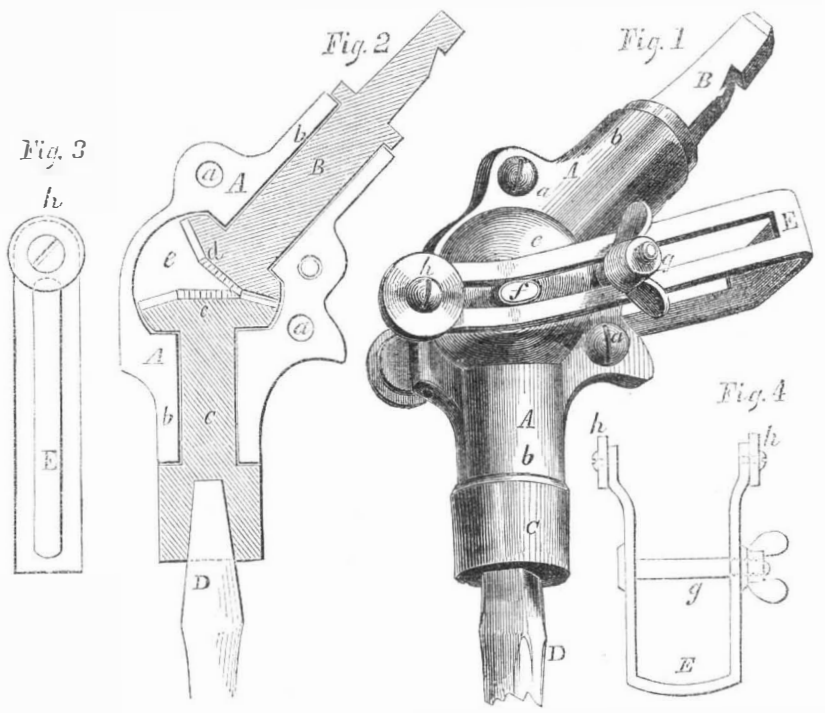
Diagonal Bit-Holder.

The bit, one of the most useful of tools, is operated by means of a crank turned by hand, the pressure requisite to force it into the substance that is being cut being given by the person who uses it pressing with his chest against a broad piece on the end of the crank; to do this requires a great amount of leaning, or stooping forward, and it is a very unhealthy operation, inducing many chest complaints.

The bit-holder represented in our engravings is one by which, with a very slight stoop, in fact scarcely any, the pressure can be given to the perpendicular bit, and the rotation is made easier. Fig. 1 is a perspective view of the whole, Fig. 2 being a section of the same. Similar letters of reference indicate the same parts in each.

A is a hollow casting of the shape represented, and made in two parts, connected together by the screws, *a*. The plane parts of A, indicated by *b*, form journals for the brace-

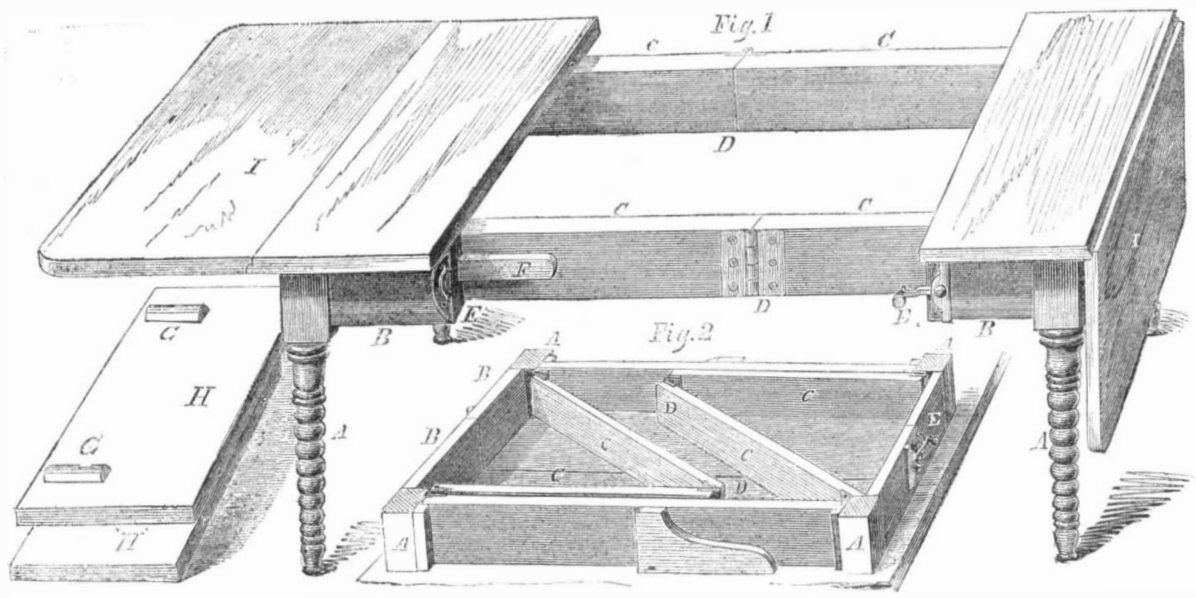
HILL & ADAMS' DIAGONAL BIT-HOLDER.



holder, B, and bit-holder, C, a bit, D, being shown in C. The brace and bit-holders have each a head worked on them in the form of a bevel wheel, *c* and *d*, (seen in the section,) which work freely together in the space afforded by the swell, *e*, in the casting, A. By this means, the brace can be made to turn the bit at any angle with respect to its own axis of rotation, by having the angle of the casting made accordingly. On the swell, *e*, are two projections, *f*, one on each side, which slide in a slot in the adjustable rest, E,—a most convenient attachment to the bit-holder, but not a necessary adjunct, as it can be used with or without the rest. This rest is of the shape shown in Fig. 4, Fig. 3 being a side view of it. A screw and nut, *g*, passes through a hole in A, which holds the rest to the casting; and it has two small wheels or friction rollers, *h*, one at each end, which much facilitate its motion downwards as the bit descends in the stuff; when boring in corners or awkward places, it can be removed.

It is the invention of Benjamin B. Hill and Samuel W. Adams, of Chicopee, Mass., and was patented January 5, 1858. Further information may be obtained by addressing as above.

CLARK'S PATENT EXTENSION TABLE.



This table, simple as it is, is yet a piece of ingenuity from the compactness and strength of its construction. In our illustrations, Fig. 1 is a representation of the table extended without the extra leaves being inserted in their proper place, and Fig. 2 is a view of the table folded up and turned upside-down to show the arrangement of the parts when it is closed. A are the legs on which are mounted sides, B, these sides are mortised into the legs to afford the strongest possible joint; when the table is closed, the pieces, F, attached to B, slide in corresponding grooves on the opposite halves of B, which render the table firm when closed, and the table is held together by the common catch, E, one on each side. C are four stretchers, each hinged to the end rail underneath the fixed top, and also hinged together at D; it will be seen that there are two different lengths of stretchers, the long and short ones being placed alternately, so that when closed they will fold or overlap each other, as seen in Fig. 2, which, if they were of equal length, they would not do. The stretchers, C are also provided with dowels, (not shown) which fit into corresponding holes on the inside of B, and this simple contrivance adds much to the rigidity of the table when expanded. One of the portable or extra leaves, H, is provided with two pieces, G, one on each end, that exactly fits the space between the stretchers and prevents them from collapsing or folding while they are in. There are two hinged leaves, I, at the ends, each supported in the usual way by a hinged bracket seen in Fig. 2. A series of these stretchers can be employed, although the table represented in our engraving has only one.

This table, with a bed three and a half feet long and 20 inches wide, can, by this device of unequal hinged stretchers, be extended seven or eight feet. Such a table can be afforded nearly as cheap as the heavy, six-legged dining table, which spreads but five feet. This mode of extension is applicable to any table.

It is the invention of Charles B. Clark, of Oriskany Falls, New York, and was patented by him 1st Dec., 1857. All further information respecting State or Territory rights can be had by addressing as above, or to E. L Ferguson, Mount Pleasant, Iowa, or to George P. Clark, Guyandotte, Cabell Co., Va. Samples may be seen at J. Skarren's, 652 Broadway, New York.

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Scientific American.

NEW YORK, FEBRUARY 6, 1858.

Remarks on Commissioner Holt's First Annual Report.

It is with no ordinary satisfaction that we appropriate two pages of this number to the publication of the Annual Report of the Commissioner of Patents. To attempt to criticise this admirable document—so frank, so manly, and so outspoken in the support of the high claims of inventors—would be a work of supererogation. In our judgment, it is above all carping criticism, and at once places the Commissioner in the position of a champion of those rights which he is called upon to foster and encourage.

We republish a single quotation for the purpose of calling especial attention to the just conception which he entertains as to the manner in which the duties of the Patent Office should be administered. In comparing our system with that which prevails in European States, he says: "It eschews that stern, unsympathizing, and distrusting temper which would receive the inventor as a stranger beneath the roof of this magnificent edifice, which has been reared at once as a monument to his genius and as a depository of the trophies of his labors. That better policy, which adopts the happy medium between two equally pernicious extremes, which, while welcoming the inventor as a friend and patron, in that frank and free conference with him enjoined by law, kindly and anxiously sifts from his invention its minutest patentable features, is a policy essentially American in its origin and aims, and must be inflexibly maintained in the administration of this Office, so long as it remains faithful to the high mission with which it has been charged."

Compare this spirit and language with the repulsive, miserable and forbidding system which had possessed the Office previous to the appointment of Judge Mason, and we shall be able to account for the upward spring which has been given to the ingenuity of our countrymen. The murky atmosphere which prevailed in the Patent Office when Judge Mason entered upon its duties was enough to stifle the generous impulses of any ordinary man who had not the nerve and practical ability to apply some judicious system of ventilation. He succeeded, and before he left the Office—regretted by all—most of the rough corners were knocked off, and the inventor is now received beneath the roof of the Patent Office as a friend and patron in frank and free conference.

This system has been most happily extended by Commissioner Holt, and yet in spite of his endeavors to render the Patent Office the friend instead of the enemy of the inventor, he has met with a sullen, mulish opposition from certain quarters where he had a right to expect encouragement and support. His policy has been scouted, and efforts are working to subvert it, by an under current of opposition too cowardly to show its hand in fair and open warfare. Instead of a system of mutual conferences, designed to carry out the wisest and best measures to encourage the progress of invention—and which should prevail in the Patent Office—would-be-wise men are planning a breakwater to check its uninterrupted flow, and are endeavoring to hedge it in by the old system of mismanagement and illiberality which has so nearly met its death.

In the exercise of that sound discretion which rests in him, Commissioner Holt has already commenced the removal of such subordinates in the Office as are known openly to oppose his comprehensive policy. In this course he will be sustained by an enlightened public judgment; and we hope it will be carried on until the Office is thoroughly purged of this refractory element, and the Commissioner's policy fully vindicated.

We cannot now spare the space necessary to the full discussion of this subject, but we intend soon to refer to it again, and will then endeavor to show from what sources the opposition springs. It has only two heads, but the sooner they are lopped off, the better. We now say, unequivocally and unqualifiedly, that, in our intercourse with inventors and the public in respect to patents—and we venture to assert that it is more extensive than that of any other establishment, save the Patent Office itself—not one word or syllable has ever been written or uttered in our hearing, condemnatory of the liberal spirit which Commissioner Holt is endeavoring to establish. We therefore *know* that he is right; and we urge him, by every consideration of duty and policy, to go forward!

We solicit a careful examination of this admirable report, believing that its spirit and language will give general satisfaction.

Sugar Canes and African Imphee.

At a recent meeting of the United States Agricultural Society, as noticed by us in our last number, Mr. Leonard Wray, an English gentleman who has seen considerable of the world, having lived for several years in the East Indies and in South Africa, brought up the subject of the African Imphee. This plant resembles the Chinese sugar cane, and he asserts that it is the parent of the latter, having been caried by the Portuguese, in the palmy days of their kingdom, from Africa to China, and there cultivated. While living in Port Natal, he found it growing wild around the huts and in the fields of the Kaffirs, (who merely sucked it for its sweet taste) and was induced to try a series of experiments with its juice, as he thought it might yield sugar. In this he was successful, and collecting a considerable amount of seed, he then sailed to Europe, being convinced that it could be cultivated in temperate climates, and sugar raised profitably from it. In France he obtained a silver medal, at the *Exposition Universelle*, for the specimen of his sugar and cane seed; and at the invitation of Governor Hammond of South Carolina, he came to the United States, in April last year. All the seed of the Imphee which he brought with him was planted on the Governor's plantation, and from choice selections about four hundred bushels of new seed have been saved. In a letter recently written by Governor Hammond—who is a thorough and enterprising agriculturist—he says, "I think this seed well worth distributing. They produce a sugar cane at least equal to the Sorgho in all respects, and some of them are twice the size. I am inclined to think, we shall ultimately find several of them (ripening at different periods) superseding the Sorgho altogether. I plant this year (1858) 60 acres, 4 of Sorgho, the remainder of Imphee."

We really hope that the Imphee is a superior sugar producing plant, and that either from it, or the Sorgho, sugar may be manufactured with profit. We caution our farmers, however, in every section of our country, not to get so excited on the subject as to enter upon the very extensive cultivation of these plants, in the hopes of making fortunes by engaging largely in their culture—let them be *generally* but not too extensively cultivated. If these plants are adapted to our varying climates, and if sugar can be made from them so as to be sold at remunerating prices, steady and cautious experiments will be more likely to establish their success than hasty and excited efforts.

Weatherology—Vegetation—Gulf Stream.

The mild and beautiful winter weather in this section, to which we have already alluded in a former number, has continued up to the present period. In the parks and gardens, trees and shrubs have budded and thrown out leaves. Probably we shall yet have frost to cause them injury, but the spring will call them forth to bud and bloom again. Fears have been expressed regarding the killing of the winter-wheat by its exposure to frequent frosts and thaws, it not being covered with its usual warm mantle of *cold* snow. We would advise our farmers to go over their wheat fields with rollers in the spring, so as to press down all the roots of the grain which may be thrown out of the soil. This practice is pursued regularly in England, where the winter seasons are similar to our present one. Our farmers should also take measures for sowing spring wheat in situations where the winter kind may be killed

This surprising mild season has exercised the fancy of some of those learned pundits who are always so ready to advance reasons for things which neither themselves nor anybody else understand. They assert that the recent warm weather has been caused by the Gulf Stream flowing about fifty miles nearer our coasts than formerly, according to the reports of some sea captains. It is well known that this wonderful stream does flow nearer the coast some seasons than others, and it may be the case this winter; but, while this would undoubtedly influence the atmosphere on the Atlantic coast, it never could affect that beyond the Alleghanies, in Canada, or the West and Northwestern regions, where the thermometer has been seldom much below the freezing point this winter, whereas it was thirty and forty degrees below it the last onc. It is folly to pretend to be wise beyond actual knowledge. No person really knows why there are such variations in the seasons. Observers may yet detect causes, and science arrange the weather influences, but at present weatherology is very far from being reduced to a science.

Harbor Navigation and Dirty Streets.

The engineer—Charles H. Haswell—of the Board of Underwriters in this city has presented an interesting report in reference to the condition of our harbor. In it he sets forth the danger to be apprehended of the channel growing so shallow that its navigation, at some future day, not very far distant, may be stopped, and our great commercial mart become desolate and forsaken by its thrifty merchants, and those who go down to the "great deep" in ships. It is complained that the vast amount of gravel, sand and filth, washed down from our dirty streets through the sewers, is one great cause of the evil; these being deposited in the channel, thus tending to shoal it up. In the main ship channel 2,532,000 cubic feet of sand have been deposited in twenty years.

Great quantities of mud are deposited from the water in our city docks; this is lifted by dredging machines, but the practice of removing it has simply been to carry it away on *punts* and dump it in the lower part of the channel, from whence it is brought back again by returning tides. This operation forcibly reminds us of the wisdom displayed by that Gothamite who employed the effectual method of destroying a hornet's nest in his barn by setting the building on fire.

It is recommended as a remedial measure that the streets of the city be kept very clean, and that the dredged mud from the docks be removed in the *punts*, and be wheeled on shore to fill up low lands adjacent to the rivers or harbor. The remedial measures proposed must meet the approval of every person, without any reference to the probable shoaling up of the main ship's channel—an event which we think is very far distant.

The Boston Steam Yacht.

It is acknowledged that the steam yacht *Voyageur de la Mer*, built at Boston for the Pasha of Egypt, has proved a failure. About the why and the wherefore of this, there are two sides to the story. One side is that the failure was caused by defective boilers, which were made in New York; the other side is, that it was owing to defective machinery, which was built in Boston. A correspondent from Medford, Mass., who is a ship-carpenter, informs us that the model of this vessel is good, having been drafted by Samuel Pook, Naval Architect, Boston, but that both boilers and machinery are defective. We sincerely regret that any vessel built in our country for a foreign potentate or plebeian should (as in this case) have tarnished the reputation of our American engineers.

Application for Patent Renewals.

Truss Frames for Bridges.—C. & T. W. Pratt, of Newton, Mass., have applied for an extension of the patent granted to them on the 4th April, 1844, for the above invention. The petition is to be heard on the 22d of March next, at the Patent Office.

Hay Presses.—Joseph Eaton, administrator, applies for an extension of the patent of Charles F. Paine, deceased, for a hay press, granted April 25, 1844. The petition is to be heard on the 19th of April next, at the Patent Office.

Lock Gate.—Henry McCarty, of Pittsburgh, Pa., has applied for the extension of his patent for "suspending, opening and closing lock gates," which expires on the 16th of March next.

Persons opposing these extensions are required to file in the Patent Office their objections specially set forth in writing, at least twenty days before the day of hearing: all testimony filed by either party, to be used at the said hearing, must be taken and transmitted in accordance with the rules of the Office which will be furnished on application.

Terrible Steamboat Explosion.

The steamer *Fanny Fern*, bound to St. Louis from Pittsburg, exploded her boiler eighteen miles below Cincinnati on the 28th ult. Fifteen persons are reported to have lost their lives, and thirty were severely injured; the boat was set on fire by the explosion, and burned to the water's edge. This is the most severe accident of this character, we believe, which has taken place on any western river since the new law for protecting life in steamers went into force. We are afraid that the western steamboat inspectors are becoming somewhat careless; and we have good reasons for believing that is also the case with those in the eastern districts. We exhort these officers to look well to their regulations, or they may soon find their situations too hot for them.

A Question in Patent Law.

MESSRS EDITORS:—As there are no lawyers here who are acquainted with Patent business, I wish to enquire if a man is not liable in an action of damages, in the Supreme Court of this State, for making a patented article when it is his intention to sell the same, even though he sells to those who own territory? Or suppose I own a county right to make and sell, can any other make in said territory and sell to others out of said county or in it? Please answer through the SCIENTIFIC AMERICAN.

A. S. RICE.

Waverly, N. Y., Jan. 27th, 1858.

[The Supreme Court of the State of New York has no jurisdiction in patent cases. Suits for damages can only be brought in the United States Courts. A patent is the monopoly of the right to *make*, *sell* and *use* the article secured by the grant of Letters Patent—therefore no one can manufacture a patented article upon territory owned by another without infringing the right of the latter.—EDS.

Activity among Inventors.

During the week ending Saturday, January 30, we filed into the Patent Office from our New York Office, *twenty-six* applications for patents, exclusive of those presented through our Branch Office at Washington. This is a cheering proof of the impetus which has been given to inventive skill by the frank and generous encouragement extended to inventors at the Patent Office.

The special correspondent of the New York *Tribune* announces the removal of Dr. Everett from the position of Chief-examiner in the Patent Office—a post he has long filled. The reason assigned is "for preparing a patent bill restricting the sphere of the Commissioner."

See advertisement of Luther Tucker & Son in another column. These veteran publishers of agricultural works are sure to offer something valuable in that line.

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FOR THE WEEK ENDING JANUARY 26, 1858.

[*Reported officially for the Scientific American.*]

POTATO PLANTERS—J. R. Albertson, of Allegheny, Pa. : I claim the arrangement of belt, Z, and fingers, f, with rods, r, and hopper, h, in the manner and for the purpose described.

PLOWS—Joseph Banks, of Dadeville, Ala. : I claim the combination of the triple-branched coulter, I, bars, F G H, and point, L, constructed and arranged as specified.

ROTARY PUMPS—J. S. Barden, of New Haven, Conn.: I do not claim a rotary pump constructed with a cylindrical case, an annulus or ring piston, and a wing or slide either hinged or fastened firmly to the piston, and made to slide through a recess in the edge of the case, the said ring piston being moved around in the case by an eccentric placed within such piston, this principle of construction being common to the pumps or propellers, described in the specifications of the United States Patents numbered 13,979, 14,599, and 18,314, and also in the specifications of several foreign patents.

But what I do claim is the above described application or arrangement of the reciprocating cylinder, D, and its chamber, C, with the case chamber, B, the induction opening, d, and the slide wing, E, fixed permanently to and so as to vibrate with the ring piston, and slide up and down in accordance with other movements thereof, and have a water passage through it, as specified.

I do not claim making both the induction and eduction passages in the slide wing, as this is shown in the pumps described in the said patents, 13,979 and 14,599.

But I do claim arranging one passage only in the slide wing, and the other in the reciprocating cylinder, D, or through the case as specified.

WASHING MACHINE—Nicholas Bennet, of New Lebanon, N. Y., assignor to David Parker, of Shaker Village, N. H. : I claim the arrangement of two or more washing chambers, with a traveling frame carrying two or more rubbers, one for each chamber, said traveling frame resting on, and supported by the sides of the washing chambers, as set forth, for the purpose of washing several kinds or qualities of clothes at the same time, without allowing the suds or water in one chamber to flow, or be dashed over into the next one to it, as described.

PEPPER-BOX—Edmund Brown, of Lynn, Mass. : I claim making a spice and pepper box air-tight and self-closing, substantially as described, and for the object specified.

MACHINERY FOR OBTAINING AND PRESERVING POWER FROM TRAINS WHILE PASSING RAILWAY STATIONS—E. T. Russell, of Shelbyville, Ind. : As I am well aware that there is no novelty in running machinery by weight, no claim is laid on that score.

But I claim the catching or saving of power from a train of cars in its flight through the curved planes, 6 6, and the appended mechanism, or any other equivalent device, substantially as set forth.

APPARATUS FOR DYEING YARNS IN THE SKEIN—M. Delany, of Clinton, Mass. : I claim combining with the vat, A, and the movable frame, B, two series of supporting rollers, K K K L L L, the pressure rollers, I I I, and the key shafts, C′ C′, and their gears or mechanism for rotating such supporting rollers when the skeins are lowered into the vats, the whole being made to operate together, substantially as described.

I also claim combining with the supporting rollers and their sustaining frames, the mechanism for separating the skeins or keeping them separate, and from overriding one another while they are in revolution.

I also claim the mode of constructing such skein separating mechanism, viz., of a combination of crossed levers, and two slide frames arranged so as to operate together, substantially as set forth.

I also claim the mode of making the dipping frame, viz., of a frame, B, and two twining frames, M M, applied so as to operate together, substantially as described.

GAS HEATING APPARATUS—P. S. Devlan, of Camden, N. J. : I claim the arrangement of the tank, generator and radiator, with each other, and with a gas burner, substantially as set forth, and for the purpose of making a gas heating apparatus for warming rooms, chambers, &c., as described.

RAILROAD CAR COUPLING—G. W. Doolittle, of Richfield Springs, N. Y. : I do not claim as new the general form of the buffing frame, as shown and described, nor do I claim the use of the draft link of the plain form as here used, as these are now in common use.

But I claim the mode I have described for inserting the draft bolt, and catching the link, while the operator is standing on the platform, as well as the mode of holding the bolt down by the clasp, h, beneath, while drawing, as is also described, I also claim the mode of releasing the hold on the draft bolt which I have described, by the self-operating agency of the pin, V, and the thumb-piece, w, acting as a self-uncoupler as described, the whole being combined and arranged substantially as set forth.

MUSICAL WIND INSTRUMENTS—C. H. Eisenbrandt, of Baltimore, Md. : I claim the construction and arrangement of wind musical instrument by the addition of compensation sliding extenson crooks or curved tubes, D E F G ; the auxiliary transition valve, H, the key-bar, L L, the secondary keys, M N, the connection actuating rods and arms, O P Q R S T U V, together, and in combination with the valves, tubes and pipes, substantially as set forth, shown and described.

CURRY-COMBS—E. L. Evans, of Providence, R. I. : I do not claim separately the flexible back, A.

But I claim constructing the curry-comb with a flexible back, A, formed of india-rubber, and flexible teeth a, formed of the same material as the back or other pliable or flexible substance which may be moulded with the india-rubber, substantially as shown and described.

[In a former patent the inventor formed the backs of curry-combs of india-rubber, with metallic teeth. This patent is for forming the whole, teeth, handle and back of india-rubber or other plastic substance, so that the whole is flexible and much more efficient.

MACHINES FOR PLOWING—J. W. Fawks, of Christiana, Pa.: I claim the employment of the barrel-shaped wheel or driver, E, constructed with spurs, K K, in the manner described in combination with guiding wheels, C C, and screw, D, and segmental rack, b, for the purpose of drawing the plow frame and plows described in the manner set forth in the specification.

MAKING BROOMS—Thomas Floyd (assignor to himself, D. K. Wunderlich, and B. F. Nead), of Chambersburg, Pa. : I do not claim clamp plates, stamped up of sheet metal, as this is not new.

But I claim the cast metallic clamp plates, B, with points, d, between which is placed and compressed the material used, by means of the bolt and screw, b, which passes through the plates and material, and which is firmly secured by means of said bolt and screw, as described, and for the purpose of making brooms or brushes, without sewing as set forth.

BLADES FOR PENCIL SHARPENERS—W. K. Foster, of Bangor, Me. : I claim tor supporting small pieces of metal, and aiding in their reduction to wedges or knife-blades, under the action of a grinder or grinding wheel, a gage bed plate or holder constructed with recesses made so as to operate substantially as described, such bed being moved along under the grinder, or the grinder moved over it in such a manner as to successively reduce each of the blanks that may be within its recesses.

RAILROAD CAR BRAKES—Samuel Gumaer, of Chicago, Ill. : I disclaim all combinations of shoes and rubbers for breaking upon both rail and wheels, when such combinations are designed and arranged to act either simultaneously or first upon the rail. I also disclaim all shoes acting rigidly upon the rail as forming no part of my combination. I further disclaim the use of cams in applying brake rubbers.

But I claim the loosely hung rubbers and spring bottomed shoe, connected as described in combination with the tri-branched cam, when the lower toe of the cam acts upon the spring, and the said parts are all relatively so arranged that the rubbers are applied to the wheels prior to the application of the shoe to the rail, substantially as and for the purposes set forth.

DEVICE FOR SHIFTING THE BOLT TO EFFECT THE TAPER IN SHINGLE MACHINES—W. D. Guseman, of Morgantown, Va. : I claim the rocking pieces, N N, with their adjustable tongues, u u, and boxes, m m, for forming a bed to receive the bolt, and reverse its inclination, so as to cut off the shingles' butt and point, and adjust their taper and thickness, as set forth.

PUG MILLS—James A. Hamer, of Reading, Pa. : I am aware that screws of different kinds have been used for tempering and carrying clay into brick machines, I therefore do not claim the screws separately.

But I claim the arresting plungers or their equivalent in combination with the screw, the whole being constructed and arranged for operation in the manner and for the purpose set forth.

MACHINES FOR PLANING AWAY ICE IN RIVERS—R. W. Heywood, of Baltimore, Md. : I claim, first, The bevel-edged plane irons, E, connected with the series of grooving beveled cutters, C C, for the purpose of grooving and planing away ice on navigable waters, substantially as set forth.

Second, The peculiar arrangement consisting of the adjustable standards, D D D′, pulleys, i j, endless chain, I, pin, pinions, f f, crank shaft, E, in combination with the ice-grooving and planing mechanism, substantially as and for the purposes set forth.

TIDAL ALARMS—Abel Hildreth, of Thomaston, Me. ; I would remark that I am aware that a fog bell has been sounded by a striking apparatus whose motive power has been obtained by the tidal movements of a float, therefore I do not claim such as my invention.

What I claim is my improved tidal alarm, constructed with the two windlass barrels, the ratchets and pawls, the reversing chains and weights, and the two float chains, arranged and applied in connection with the striking mechanism, and the float and its stem or rod so as to operate therewith, substantially as described.

HEATERS OR COOLERS—J. C. Hoadley, of Lawrence, Mass. ; I claim constructing heaters or coolers by forming the tubes, tube sheets and case thereof of homogeneous metal and without joints uniting said parts.

CORN PLANTERS—P. C. Mosier. of Homer, Ill. : I claim the beam, A, when shaped, as specified, and pivoted to the axle, C, by its forward end, and has its rear end which carries the tubular furrow opener covering shares, seed hopper, and driver's seat, arranged to run directly upon the ground, substantially as and for the purposes set forth.

SHINGLE MACHINE—Elijah Morgan, of Morgantown, Va. : I claim, in combination with the traversing carriage, G, the horizontally semi-rotating piece I, with its flanges, m n, and m′ n′, operated in the manner and for the purpose set forth.

I also claim, in combination with the carriage, G, the auxiliary carriage, H, when made susceptible of adjustment as set forth, for the purpose of changing the line or angle at which the bolt brought against the saw, as described.

STRAW CUTTERS—J. H. Mumma, of Harrisburg, Pa. : I claim the arrangement of the feed rollers, e e′, operated on by tappets, o o, crushing cylinder, d d′, provided with gum springs, n n, cutter bar, g and h, and cutter, l l, substantially in the manner and for the purposes set forth.

TANNING LEATHER—B. G. Noble, of White Water, Wis. : I am aware that sulphate of soda, chloride of sodium, alum and nitric acid, have been used in different proportions and combinations in other processes of tanning, and therefore I do not claim their use in any manner differing substantially from my own.

But I claim the fixing bath composed of nitric acid and glycerine diluted with water, in the proportions specified, or thereabouts, and employed substantially in the manner set forth.

RAILROAD CAR SPRINGS—Henry Waterman, of Hudson, N. Y. : I claim the combination of a series of bars or leaves of steel, as specified, with the end bearings, d d, and distributor, b, or their equivalents: substantially in the manner set forth.

COTTON PRESS—D. G. Olmstead, of Vicksburg, Miss.: I do not claim the employment of a fusee wheel, single or double, for the purpose of pressing,

But I claim providing the fusee wheel with holes or equivalent means of attachment at intervals from end to end of the flanges thereof, so that the leverage of the press may be readily varied when desired, substantially as specified.

STRAM THROTTLE VALVES—J. W. Osgood, of Columbus, Ohio : I claim the plate, J, and rocker, K, arranged in connection with the perforated valve seat, H, operated substantially as described, for the purpose of increasing or diminishing the area of the steam passages in the valve seat.

RAILROAD CAR COUPLING—John Pearson, of Sterling, Iowa : I do not claim the use of a single spring link as a coupling.

Nor do I claim draft pieces held together by an exterior spring.

But I claim the combination link made up of the spring, c, bent as specified, iron piece, a, and arms, b b, connected therewith by interior projecting points, as described, when used in combination with the levers, h, and pins, i i, substantially as and for the purpose set forth.

HEEL SPUR TO PREVENT SLIPPING ON ICE—Horatio Pollard, of Boston, Mass. : I claim the combination of the screw socket and screw stud, or spur, as described, and for the purpose specified.

LANTERNS—Jacob H. Reighard, of Birmingham, Pa. : I claim attaching the top and bottom trimmings of lanterns to the globe by means of lugs, fitting on a bead around the upper and lower neck of the glass globe, so that they may be more readily attached or removed, or a new globe inserted when necessary, in the manner described.

PADLOCK—John Schneider, of Chicago, Ill. : In padlocks wherein the bolt is shot through the staple of the shackle by the direct action of the shackle itself, I claim the peculiar mechanism described, consisting of a bolt and tumbler rotating upon a common stationary spindle, in combination with an auxiliary trigger, the said parts being constructed, arranged and operating in connection with each other, in the manner substantially as specified.

APPARATUS FOR TANNING SKINS—C. A. Shaw and J. Clark, of Biddeford, Me. : We make no claim whatever to the invention of Wattles, as patented by him May 26, 1857, or any part thereof.

We claim the use of the horizontal movable frame rods or sticks, c c c c, the toothed bars, m m m m, and the rests, d d d d, or their equivalents, for the purposes set forth and specified.

PREPARING MASH FOR DISTILLATION—George Seitz, of Easton, Pa. : I claim steeping or infusing the maize and rye or other grain or malt separately, so that each may be subjected to the degree of temperature necessary for the proper separation or dissolution of their parts, and then uniting or mixing the two infusions, substantially as and for the purpose set forth.

[Two mash tubs are provided, the one raised above the other, and each is furnished with rotary mixers, so that when they are both thoroughly digested, they can be mixed in the bottom tub.]

HYDRANTS—W. Race and S. R. C. Mathews, of Seneca Falls, N. Y. : We do not claim, broadly, for we are aware that hydrants have been constructed, and their parts arranged in various ways, so that they could be removed for repairs without excavating, the parts being rendered capable of being withdrawn from the case. But we are not aware that an arrangement like ours has ever been used for effecting the purpose.

Neither do we claim the casing of hydrants, when the case and base or pipe, D, are in one piece, and permanently attached to the pipe from the "main," as that has been previously done.

Neither do we claim, separately, the arrangement of the valves, B′ G.

But we claim, first, The annular valve, B′, and the disk valve, G, attached to the rod, C, in combination with the escape or leak-opening, j, and seat, F, the above parts being arranged to operate as and for the purpose set forth.

Second, The combination of the case, A, induction pipe, D, provided with flanch, k, and the jacket, E, when arranged as shown and described, to effect the desired end, to wit, the ready removal, when necessary, of the case and working parts of the hydrant for repairs.

[This hydrant contains certain improvements, by whose means the valve rod can be operated without removing the cap, the waste pipe or orifice is opened as the induction pipe is closed, and *vice versa*, and the parts are so arranged that the hydrant may be readily detached from its base, for cleaning or other purposes, without any excavation.]

GALVANIC BATTERY—Ebenezer Seaver, of Boston, Mass. : I claim the employment of two or more porous cups, the one within the other, in the manner and for the purpose substantially as set forth.

RAKING AND BINDING DEVICES FOR HARVESTERS—Allen Sherwood, of Auburn, N. Y. : I claim bending the grain by means of the wire, Y, placed on a spool or pulley, J, and carried partially around the grain by the hooks, g, of the arm, M, the hooked arm being used in connection with the stationary fork, n, and the rotating forks, m m′, and cutter, l, said parts being arranged to operate in relation to each other, as shown and described.

[With this attachment, and the aid of an assistant, the grain can be gathered into sheaves and bound just at the same rate at which it is cut by the harvester.]

NIPPLE GUARD OF FIRE-ARMS—David W. Smith, of Boston, Mass. : I do not claim applying a cover guard to the percussion nipple.

Nor do I claim applying the cover guard directly to the lock, so as to turn on a pin or fulcrum projecting therefrom, and operating and throwing up the said guard by a lever separate from it, and actuated or moved by a cam on the lower part of the hammer or cock.

But I claim applying the cover guard to the lock in manner, and operating it by means substantially as described, that is to say, by jointing the cover guard directly to the lever, e, and operating the said guard by means of the tongue, k, and the lever, in connection with the arm, d, or its equivalent, extending from the cock or hammer, substantially as described.

WATER-WHEEL—Frederick Smith, of Buffalo, N. Y.: I do not claim, broadly, admitting air into the bucket case to secure the full percussion, reaction, and free discharge of the water, irrespective of the peculiar manner in which the air is introduced, and the peculiar construction of wheel in connection with which this principle is employed.

But I claim the peculiar construction, arrangement, and combination of the hollow perforated vertical shaft, C, radial and spiral buckets, A, B, and the scroll and cylinder case, D, E, whereby the two actions of the water, to wit : the full percussion and the full reaction are employed in the same wheel, without one interfering with the other, and whereby also a continuous draft of air is admitted into the bucket case above the water, so as to fill the vacuum or space between the water and perforated shaft, and the force and gravity of the water in its reaction thereby greatly increased, and a free discharge secured, substantially as set forth.

[By this improvement the water enters the scroll, and acts with its full percussive force upon the radial buckets, then glides smoothly onto spiral buckets, and gives a full reaction force, aided by the pressure of air above, which is induced to enter the bucket case through a hollow central shaft, by the suction of the buckets, and a vacuum existing between the water and the hollow shaft. The water having performed its full duty discharges through the bottom of the cylinder, without having had its course reversed after it gave the first stroke, which result, it is believed, has never been attained so perfectly, owing to the fact that in all instances where the two actions are combined, the buckets are more contracted at the point of discharge than at the entrance, which defective construction tends to kill the percussion stroke by causing the water to strike into a solid body, and then to force itself through the contracted part of the buckets.]

PLOWING MACHINES—William Stoddard, of Lowell, Mass. : I claim constructing the plows, X, with an adjustable depth gage, e and S, attached to the mold-board thereof, in the manner described, when such plows are connected (for operation) to an endless chain or band, in combination with the flexible arms, J, which carries the plows, X, and bands, W, essentially in the manner and for the purposes fully set forth and described.

CANVAS SHEETS CONNECTED WITH LIFE-PRESERVING RAFTS—Lorenzo Taggart, of Philadelphia, Pa. : I do not claim the formation of rafts by the union of water casks, or other buoyant articles.

Nor do I claim using casks partially filled with water, separately considered.

But I claim the canvas sheet provided with tubes, a, and serving the double purpose of awning and water receiver, and connected with the raft, substantially as set forth.

WEATHER-STRIP FOR DOORS—Joseph Tinney, of Westfield, N. Y. : I am aware that weather-strips have been constructed with diagonal slots, taking pins in the door, in such a manner that an endwise motion given by shutting the door causes the strip to press against the sill or casing, but such I do not claim.

Nor do I claim the employment of springs differently arranged, and otherwise combined, for giving a yielding or elastic pressure to weather-strips.

But I claim the employment of curved slots in weather-strips, with upwardly curved or convex springs or bearings on the lower side thereof, substantially in the manner and for the purposes specified.

ARRANGEMENT OF PASSAGES AND VALVES FOR CUSHIONING THE PISTON OF STEAM ENGINES—Norman W. Wheeler, of New York City : I claim arranging the check valves in the steam passages for cushioning the piston and balancing the steam valves with steam taken from behind the piston, substantially as set forth.

HARVESTERS—Samuel W. Tyler, of Greenwich, N. Y. : I claim the sliding head-piece, a, to which the inner end of the finger bar is hinged, in combination with the lever, h and m, the movable standard, d, the pendulous lever, e, and driving wheel, A, when the said parts are arranged for joint operation in the manner and for the purposes set forth.

CORN HARVESTERS—L. C. Wilder, of Lexington, N. C. : I do not claim, separately, or in themselves considered, any of the described parts.

But I claim the combination of the oblique reciprocating flanched cutters, V V, feed rollers, L L, and tilting platform, H, arranged to operate substantially as and for the purpose set forth.

[This harvester has a projection on each cutter, which tilts the stalk on to a tilting platform when cut, and when the driver wishes, he can, by means of a lever, tilt all the stalks off the platform.]

SEED PLANTERS—J. D. Willoughby, of Pleasant Hall, Pa. : I claim first, The rubber spring, u, in combination with the chair, D, screw, T, and nuts, v v, to hold the joint, c, in any desired position with any desired firmness, for the purpose of making bar S, a flexible and adjustable brace for grain drill tubes or shovels, which can be graduated to bear different degrees of resistance, and to hold the tube, G′, at any desired angle, to regulate the depth of the tube in the soil, when the seed is being planted.

Second, The combination of the rod, g, with the inclined standard, D, on the pole, for the purpose of cutting off the discharge of the seed, and elevating the seed tubes and cleaners, substantially as described.

RAILROAD CAR BRAKES—George W. Windsor, of Allegheny, Pa.: I claim the use of a brake constructed as described, and operating at the will of the brakesman, by means of levers working in the threads of a screw cut on the axle of the car or locomotive wheels, to pinch the rails on which the wheels travel, and thus retard the progress of the cars.

HYDRAULIC ENGINE—James S. Groynne, of New York City, (assignor to Samuel Nicolson, of Boston, Mass.) : I claim applying and arranging the roller passage, b b, the roller, D, and the cam piston, B, together, and in the case, A, in such manner that a liquid, when expelled from the pump, may pass out through the said roller passage, b b, as described.

I do not claim the combination of an air vessel with a pump.

But I claim the arrangement of the closed air vessel, G, on the case, A, and in respect to, and so as to operate in connection with, the opening, b b, and the roller, D, of the said case, or serve not only as an air vessel, but as a receiver and guide for the roller, substantially as set forth.

REEFING TOP-SAILS—Donald McLean, of Boston, Mass., (assignor to himself, Samuel Green and Nathan Ames, of Sangus, Mass.) : I claim the arrangement, substantially as described, of the revolving jack-yard, B, and the reef lines, C, whereby the sail is reefed by simply doubling over itself, instead of being rolled or tied up.

WINDOW SHADE FIXTURES—Charles S. Schleier, of Brooklyn, N. Y., (assignor to John H. Bonn, of Weehawken, N. J.) : I claim as an improved article of manufacture, a window-shade fixture having the swivel pulley, A, attached to the screw rod, c, which is fitted in or passes through the nut, D, on the plate, E, substantially as described, and for the purpose set forth.

[This is described and illustrated in another column.]

SECURING OF STRAPS UPON BOOT LEGS—L. J. Worden, (assignor to himself and Edwin L. Swartwout,) of Utica, N. Y. : I am aware that metal plates have been used for fastenings in various ways in the construction of harnesses, carpet bags, book clasps, and the like, by rivet pins cast upon the plate, or by riveting on the plate by the use of separate rivets, and that boot straps and leather belting have been fastened by riveting the parts together by the use of separate rivets ; I do not, therefore, claim any such devices.

But I claim the fastening of straps upon boot legs by the use of the toothed clasp, A, as I have described it, formed of a simple flat piece of sheet metal with the points or teeth by which it is fastened, punched or projected from the plate by the use of a punch, die, or other equivalent means, which, being angular in their shape, and pointed, are at once a substitute for the separate nail or rivet, and capable of being driven through the leather and easily clenched on the opposite side.

RE-ISSUE.

MACHINE FOR NUMBERING THE PAGES OF ACCOUNT BOOKS—John McAdams, of Boston, Mass. Patented August 12, 1851 : I claim the mode of arranging and operating the numeral types for printing the pages of the whole book, substantially as described, to wit : arranging the types of the several numbers, from 1 to the highest number required, in a serial order, in one or more continuous lines, one behind another, and bringing them up successively and separately to the point of impression, so that the type of each number is independent of all others, and used alone, and but once in the paging of the whole book, and all others are out of the way ; and this I claim, whether said types are fixed in a chain or chains, or in any other manner by which the same system of operation is obtained.

I also claim arranging the two type chains, or continuous lines of type, parallel with each other, at a proper distance apart, and with the type in proper serial order, and operating the same simultaneously, substantially as described, to print the numbers of two pages simultaneously on the two opposite corners of the same side of a sheet.

I further claim the arrangement of two pairs of type chains, or continuous lines of type, substantially as described, to print the numbers of two pages on each side of a sheet while the sheet is passing once through the machine.

[This machine will page sheets of paper in colored ink, and in the proper place when fed to it, giving each sheet its proper number, increasing one number for each sheet, exactly in the correct order. These paging machines save a great amount of time, and are reliable and accurate.]

ADDITIONAL IMPROVEMENTS.

COVERING FOR DRAWING ROLLS—Joseph M. Smith, of Manchester, N. H. Patent dated July 7, 1857 : I claim the employment of gutta percha in combination with black lead as a material for draft rolls, as set forth.

MILL-STONE DRESS FOR HULLING RICE—Charles R. Barnes, of New York City. Patent dated February 20, 1855 : I claim the bed-stone, with radial and curved furrows, as specified, when combined with a runner-stone having the curved furrows, substantially the same as in the before-mentioned Letters Patent.

Literary Notices.

THE BIBLIOTHECA SACRA—The number of this able theological review for this quarter, published at Andover, Mass., by W. F. Draper, contains an essay on Dr. Arnold's theological opinions, and eight other essays or reviews on various interesting subjects, all characterized by the usual profundity and ability which distinguishes this periodical.

THE ECLECTIC MAGAZINE for February has been received, and it contains, as usual, the cream of the foreign journals. We have also received the "Knickerbocker Magazine," each new number of which keeps up its old reputation.

THE PHOTOGRAPH AND AMBROTYPE MANUAL—By N. G. Burgess ; Wiley & Halsted, publishers, New York. The fourth edition of this valuable little work has just appeared, and we can recommend it to all who do, or who would, preserve the scenes and faces which they admire, by the aid of the photographic art.

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Correspondents

L. B. V., of N. Y.—See Mr. Lester's advertisement on another page, for a good planing machine. We are not acquainted with a whitewash that will last for three years; but a cheap paint, composed of dry clay and sand in powder, some whiting, red lead, and linseed oil, will perhaps answer your purpose.

J. N. C., of Ohio.—You state that you have bought a patent recipe for making a paint, and have described it as a composition of shellac varnish and common paint, but say that while you can cut the varnish, you cannot mix it with the paint, and wish us to tell you how to mix it. Why don't you inquire of the person from whom you bought the recipe? He is bound to tell you, for "value received." We do not know why you have found difficulty in mixing paint with lac varnish. We can do it without any trouble; never heard of any difficulty experienced before your case.

J. F. P., of N. Y.—You state that you cannot fill your iron molds in making brass castings, and that you are unable to find out the cause. We do not know wherein the error in casting exists, but the result undoubtedly points to a defect in venting the mold. Some air, we think, must be retained inside, which prevents the brass filling the entire interior.

J. T., of Maine.—We presume you do not mean whalebone buttons, but those made of a composition of india rubber resembling whalebone, which are now in common use. We are not acquainted with the manufacture of whalebone buttons.

D. B. T., of Ohio.—Your suggestion to make an excavation large and deep enough to hold sufficient water to float the *Leviathan*, has been proposed to us several times. It has not escaped the attention of English engineers.

J. R., of La.—We are in receipt of your Letters Patent and $20. The engravings will appear in our paper in about two weeks.

J. S., of Ohio.—You have made the water of your cistern clear by throwing some alum water into it, and you now find that the water is hard, and curdles soap. You can render it soft again by the use of some soda ash in solution. If you employ the water for drinking, be very careful and use only a very small quantity of the soda; for washing purposes you need not be so particular.

M. B. B., of N. Y.—We have examined your sketch of the double-acting pump, but do not find any patentable feature in it. It is not new to work the piston of one cylinder by a rod passing through the hollow rod of the other piston. The ill-fated steamer *Pacific* was not 300 feet long; the *Persia* is 360, the *Adriatic* 354, and the *Levathan* 700 feet long.

C. B. H., of N. Y.—The cost of a nautical almanac is fifty cents; you can obtain it from R. L. Shaw, No. 222 Water street, this city.

H, C. S., of N. Y.—We do not know what kind of oil the "lunar" is. We think it is a coal oil with a flash name. The agents who sell it can tell, if they will; ask them about it.

L. A., of Mass.—There is no power gained by the use of a balance wheel. It is a regulator and accumulator of power. You will obtain no advantage from one on the shaft of a circular saw driven by a belt; if it were a reciprocating saw, it would be advantageous.

W. Q., of Pa.—To obtain the information you want in reference to the velocipede patented by Kellner, you should order a copy of his patent from the Commissioner of Patents.

F. B. W., of Ill.—The case you suppose is one that never could occur, as a syphon will only work when the delivery tube is longer than the receiving tube. In the first example, the water would rise up the tube just so long as the atmospheric pressure was excluded by mechanical means, as an air-pump; but the moment you remove the air-pump, the air presses just the same on the mouth of the tube as on the water in the well, so that it would again fall to its original level.

J. T. H., of Tenn.—We are not aware of having received a letter from you before. You can correspond with us again. We mean to neglect no one who complies with our rules in such matters.

S. Marshall, of Wilmington, Del., wishes to correspond with different manufacturers of carriage knobs in America and England.

A. B., of Ohio.—Gun barrels are browned by rubbing their surface with a weak solution of nitric acid and sulphate of copper, and setting them aside for a few days until they are coated with rust. This is then brushed off; the barrel washed in warm water, dried, and rubbed up with a little wax dissolved in turpentine. Two and three coatings of the acid are sometimes required to bite a sufficient depth into the metal.

E. E. W., of N. H.—In "Smee's Electro-Metallurgy," you will find a full description of the processes for multiplying daguerreotype pictures, also etching pictures by the galvanic battery.

E. C. M., of N. Y.—We decline publishing your communication, as it does not, in our opinion, throw any light on the phenomena of the remains of tropical plants and animals now found in the arctic regions. You have advanced no facts to prove that the moon once formed part of the earth, and was shot from the bed of the Pacific or Atlantic oceans as you assert, by a great steam explosion caused by the water getting into the red-hot interior of the globe.

J. T., of Ohio.—There is no power in a lever; it only becomes a mechanical power when force is communicated to it. Those neighbors of yours who intend to derive as much power from a long lever as will drive a four-horse threshing machine are not acquainted with the "laws of mechanics." You are safe in agreeing to pay all the expense, if it operates.

A. F., of Mass.—You ask the question, "Has the right to buy up second-hand patented machines and repair them, even to making all the essential parts new, so long as the original table or frame is used in the same Territory in which they were originally sold to be used?" To replace the essential worn out parts of a patented machine on an old frame is nothing less than making a new machine. Unless you own the patent right, you cannot. As a mechanic, you can repair any broken part of a patented machine for others.

M. B. F., of N. Y.—Make your gang pulleys as follows, and you will have them arranged so as to run one-twelfth slower each set off. Driver shaft first pulley, 8-inch; driven pulley, 4-inch; second driver, 7 13-17-in., driven 4 4-17; third driver, 7⅓-in. driven 4⅓; fourth, 7 1-5 in. driven 4-4-5. This proportion of pulleys will enable you to decrease the speed of the driven shaft one-twelfth with every change of the same belt, so as to run your cards with the speed desired.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, January 30, 1858:—

F. H. S., of Conn., $25; T. G., of Pa., $20. S. L. W. of Pa., $150; N. S., of La., $30; J. P. M., of R. I., $30; A. F. F., of Vt., $30; A. B. H., of N. Y., $30; C. W., of Pa., $25; M. G., of Pa., $25; C. Van DeW., of Mass., $27; J. B. F., of Wis., $30; J. H., of N.Y., $25; F. & Co., of N. Y., $250; C. & M., of Iowa, $20 H. A. W., of N. Y., $25; J. T., of N. J., $10; T. V., of Cal., $27; C. E. G., of Pa., $30; W. I. M., of Conn., $30; S. G., of Mich., $50; T. A. D., of N. Y., $10; W. & C., of Conn., $32; T. & B., of N. Y., $45; S. C., of N. Y., $30; F. P. A. Jr. of Conn., $25; A. B., of Ohio $28; E. K., of Pa., $30; J. P. W. D., of Ind., $30; J W. F., of Mo., $35; L. D. of N. Y., $20; S. H. G., of Conn., $30; A. E. L., of Pa., $15; C. B. C., of N. Y. $20; H. & Co., of N. Y., $57; F. C. G., of N. J., $20.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, January 30, 1858:—

C. & M., of Iowa C. B. C., of N. Y.; J. D., of N. Y.; W. G. S., of Mass.; L. R., of Mass.; H. A. W., of N. Y.; T. G., of Pa.; M. G., of Pa.; J. H., of N. Y.; C. Van DeW., of Mass.; F. H. S., of Conn.; N. W., of Conn.; A. B., of Ohio; W. McK., of Cal.; T. V., of Cal.; F. C. G., of N. J.; W. W. D., of Cal.; L. D., of N. Y.; I. C., of Vt.; A. L., of Conn.; T. R, of Pa. T. D. I., of Mich.; W. O. H., of Pa.; A B, of N. Y. S. G. Jr., of N. Y.; J. A. B., of Mass.

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will be, as usual, at No. 128 Fulton street, New York. There is no other city in the Union so easy of access from every quarter as this, consequently there are greater advantages in regard to the transmission of models, funds, &c., through the various channels that center in New York. Two of the partners of our firm reside here, and during the hours of business are always at hand to counsel and advise with inventors. They are assisted by a corps of skillful Examiners, who have had many years of active experience in the preparation of cases for the Patent Office.

To render our Patent Agency Department complete in every respect, we have established a

BRANCH OFFICE IN THE CITY OF WASHINGTON,

on the corner of F. and Seventh streets, opposite the United States Patent Office. This office is under the general care of one of the firm, assisted by experienced Examiners. The Branch Office is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

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We especially require that all letters, models and remittances should be made to our address at New York.

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We have been accustomed from the commencement of our business—twelve years since—to examine sketches and descriptions, and give advice in regard to the novelty of new inventions, *without charge*. We also furnish a printed circular of information to all who may wish it, giving instructions as to the proper method which should be adopted in making applications. This practice we shall still continue, and it is our purpose at all times to give such advice free and candidly to all who apply to us. *In no case will we advise an inventor to make application unless we have confidence in his success before the Patent Office.*

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When doubt exists in regard to the novelty of an invention, we advise in such cases a

PRELIMINARY EXAMINATION

to be made at the Patent Office. We are prepared to conduct such examinations at the Patent Office through our "Branch Agency," upon being furnished with a sketch and description of the improvement. Our fee for this service will be $5.

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for a patent through our agency are very moderate, and great care is exercised in their preparation. No cases are lost for want of care on our part in drawing up the papers, and if the claims are rejected, we enter upon a speedy examination of the reasons assigned by the Commissioner of Patents for the refusal, and make a report to our clients as to the prospects of success by further prosecution.

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All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, enclosing the official letters, &c.

FOREIGN PATENTS.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard Saint Martin, Paris; and 3 Rue Therrsienne, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

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The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.
Yours, very truly, CHAS. MASON.

CORN STALK CUTTER—THE UNDERsigned can produce a machine, that, with one horse and boy, will cut down standing corn at the rate of two acres an hour; but, before incurring further expense, he wishes information relative to the need of such an implement at the West. Farmers and others interested will please address WILLIAM S. TILTON, Boston, Mass.

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PORTABLE STEAM ENGINES.—S. C. HILLS, 12 Platt street, New York, offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, suitable for printers, carpenters, farmers, planters, &c. A 2½ horse can be seen in store; it occupies a space 5 by 3 feet; weight, 1,500 lbs.; price $240. Other sizes in proportion.

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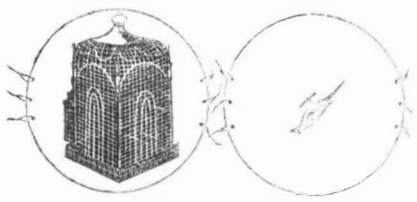
The science of optics is full of interesting and extraordinary facts which admit of many amusing demonstrations. We need only mention the magic lantern, an instrument that should be possessed by every school; the kaleidoscope, whose changes are not to be counted and by whose means a few bits of broken glass and pearl buttons, in fact any small things having color, may be made to assume the prettiest of shapes, always changing and never twice the same. These and some others are beyond the reach of many, and therefore we illustrate the thaumatrope or wonder-turner, because every child can make one for himself.

Cut out a piece of card-board of circular form and affix to it six pieces of string, three on each side. Paint on one side of the card a bird and on the other a cage; taking care to paint the bird upside-down, or the desired effect will not be produced. When showing the toy, take hold of the center-strings between the fore-finger and thumb and twirl the card rapidly round, and the bird will appear snugly

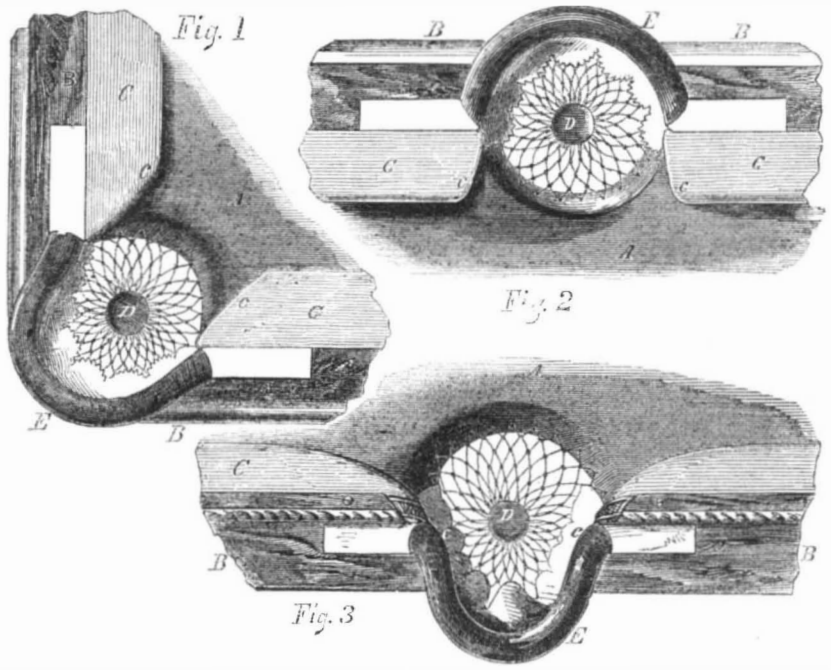


esconced in its cage. The principle on which this effect is produced is, that the image of any object received on the retina or optic nerve is retained on the mind about eight seconds after the object causing the impression is withdrawn, being the memory of the object; consequently the impression of the painting on one side of the card is not obliterated ere the painting on the other side is brought before the eye. It is easy to understand from this fact how both are seen at once. Many objects will suit the thaumatrope, such as a juggler throwing up two balls on one side, and two balls on the other; and according to the pairs of strings employed, he will appear to throw up two, three or four balls; the body and legs of a man on one side, and the arms and head on another; a horse and his rider; a mouse and trap, but we leave it to the ingenuity of our readers to devise for themselves.

Who would ever think that a bottle can be lifted by a straw? But it can be done in the following manner: take a stout unbroken

straw, and bend the thickest end of it, between the knots, into an acute angle, and put it in a bottle so that its bent part may rest against the side of the bottle, as in the above engraving; then take hold of the end of it and you will be able to lift up the bottle by the straw, and the nearer the angular part of the latter comes to that which passes out of the neck of the former so much the more easy will be the experiment. In this case, the force being distributed in straight lines, the straw, if it be perfect, cannot break by compression, and there is no tendency to bend it.

PHELAN'S IMPROVED BILLIARD CUSHION.

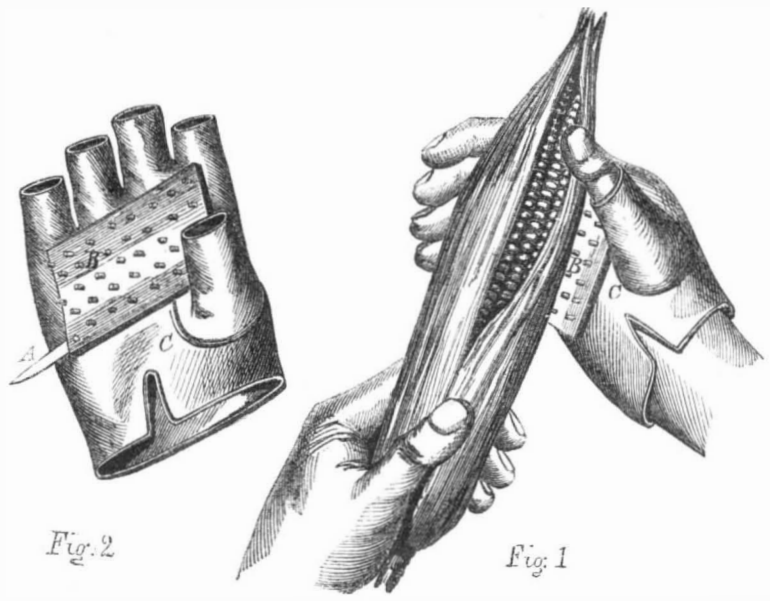


Our illustration represents a great improvement in the form of billiard cushions, which is intended to overcome two great evils that attend the ordinary construction. Fig. 3 is the old form of cushion and pocket. A is the table, B the side, and C the cushion; D the pocket, and E the pocket-iron, covered as usual with leather. In this form of cushion it will be seen that it is gradually sloped off from its proper width to the pocket, and the player when his ball strikes any portion of the sloped part, can never be exactly certain of the angle at which the ball will rebound, by this means a great quantity of accurate reflecting surface is lost to the player; again, when a ball enters the pocket, it is almost sure to strike the pocket-iron at one of the points marked *e*, and in practice, it is found that the leather covering of the pocket-iron quickly wears away from those points, leaving the metal bare against which the ball strikes, and becomes in consequence quickly worn out and injured, so as to be unfit for playing.

Fig. 2 shows a side pocket on the new principle, the same letters referring to the same parts as in Fig. 3, in which it will be seen that the cushions, C, are extended perfectly even in their width close to the pocket-hole (as will also be observed in Fig. 1, which is a corner pocket on this plan), so that a greater amount of reflective surface is obtained; for the game of billiards is not one of chance, but one of mathematical precision and accuracy. The cushions turn off abruptly at a slight angle to the pocket, just enough to give a clear entrance to the ball, and of such a shape from the corner of *c*, that should the ball once strike these, it cannot fail entering the pocket, and they also project about one-eighth of an inch in front of the pocket-iron. The shape of the pocket-iron has also undergone a material change in shape; it is, as will be seen, perfectly concave, and there is no part which can possibly be touched by the ball, but the moment it enters the space between the cushions, it is sure to fall into the pocket without touching the iron at all. We regard this as a great and important improvement in the billiard table, and will no doubt be thoroughly appreciated by the numbers who take delight in this popular and almost universal game.

It is the invention of Michael Phelan, of New York, who has assigned the invention to H. W. Collender, No. 53 Ann street, New York. A patent was secured January 12, 1858, for the shape of pocket irons and angular cushions, combined or separate, and was previously noticed on page 155 of the present volume of the Scientific American.

COHEN'S HUSKING AND SHELLING GLOVE.



This glove can be used for husking as well as shelling corn. A plate, B, of leather, metal, or any other suitable material, armed with pins as teeth, is secured to the palm of the glove or mitten, C. In our engraving, Fig. 1 represents the husking operation, which is performed by grasping the butt-end of the ear with the left hand, and pressing the right hand, on which is the glove, against the small end of the husk, and by slightly turning the right hand, the husk is opened, and can be readily pulled down, the glove protecting the hand against soreness. Fig. 2 shows the glove when off the hand. On shelling, the grains are readily detached by the action of the pins of the plate upon the corn. A knife, A, which is pivoted to the plate in the manner of a pocket-knife blade, and which can be folded into a recess of said plate, if required, serves to cut off the butts of the ears to facilitate the operation of husking. The device appears to be very useful and quite ingenious. It was invented, and patented Jan. 8, 1858, by Emil Cohen, of Washington, D. C., who will give any desired particulars.

Iron Production.

The Pottsville *Journal* states that the total production of iron in England, in 1740, amounted to seventeen thousand tuns; the returns of 1855, however, show a total production for that country of more than three and a half millions of tuns. The present annual production of iron in the world is, in round numbers, seven millions of tuns. In 1782, the total quantity of hammered iron exported from England was 427 tuns. In 1854, the total quantity of pig iron exported was 293,000 tuns; of puddled and rolled iron, 883,000 tuns. There are now in England 599 furnaces, with an average yield each of 6,000 tuns per annum. Two hundred and thirty thousand men and two thousand steam engines are constantly employed in the manufacture. The value of the gross product is equal to $125,000,000. In the United States, ten years ago, no iron rails were made. Two years ago, 135,000 tuns were manufactured. The product of the Lehigh region in 1855, was 140,000 tuns. The valley of the Schuylkill produces annually 100,000 tuns. The Susquehanna valley produces 200,000 tuns; the valley of the Potomac, 80,000; and the Southern States, 40,000; Western Pennsylvania, Ohio, Tennessee, Kentucky and Missouri, 300,000 tuns. The aggregate value of United States manufactures, by the return of 1855, was $50,000,000.

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